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„Underpricing effect in Poland, Hungary and Czech Republic“

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1. Introduction

17 years ago no one would have thought that democracy and capitalism could be created behind the “iron curtain”. The dreams of modern financial markets and initial public offering were only in science fiction literature. The fall of communism in Eastern Europe was a big surprise for everybody, because no one expected that it was possible. The “new democracies” faced many political and economical challenges that had to be solved quickly, for example, how to deal with state-owned companies. One of the strategies to deal with this challenge was reorganisation, restructuring and initial public offering.

After 17 years of transformation there are very few working papers about initial public offerings in Eastern Europe. Scholars have concentrated more on economical transformation than on the underpricing effect. The only paper that I have found about the share’s undervaluation was written in 1998, which was before the time when all the stock exchanges were reaching their highs and nobody even imagined that 2 years later there would be a crash. That is why I have chosen to investigate this effect and make the reader familiar with the underpricing in this part of Europe. It is particularly interesting, because my sample contains data from 1991 until 2006. It means that you can observe several economical cycles in this part of Europe and how differently the stock exchanges reacted. It is also worth mentioning that the best know how was directly implemented into these markets. It not only allowed the time costly financial market’s development phase to be skipped, but, through this information transfer, the system’s imperfection was copied too. If the markets were perfect, you would not be able to observe the underpricing effect. It cannot be forgotten that in 2004 Hungary, Poland and the Czech Republic entered the European Union. This historical event is very important for investors, because it showed that these countries had successfully completed the difficult transition process. For investors it was a positive sign, because the political risk was minimized and these countries, especially Poland, were significant markets. EU enlargement also had another positive effect. A different group of investors decided to invest their money in these stock exchanges. Yuce and Simga-Mugan (2000) describe in their paper that the investors used these 3 stock exchanges for diversification. According to de la Rosa and Crawford (2004), Poland not only with the other 10 countries increased the EU members to 25, but brought along with itself one of the most modern security trading systems among the new members countries. The authors claim, that the size of the market will bring financial and political stability to the EU. During these 17 years of the financial market’s existence you can observe not only how international events like the Russian debt crisis, the internet bubble and world depression influenced the number of IPO and the underpricing effect, but how the market behaved in a totally new open market condition.

After this small introduction I briefly describe my work. In the first theoretical section I describe how the economy worked under the communist regime. I also make the reader familiar with the privatisation process in Hungary, the Czech Republic and Poland. In the last part of this theoretical section I present the theories that try to explain underpricing in the short and long run. After this theoretical part the reader should have a broad overview about the economy and privatisation process in these 3 countries and different theories about the underpricing. The next section is an empirical section. In this part I show what methods I used in order to measure the undervaluation. I analyse and describe the results using statistical methods. In the last section I compare the theory with the results and draw the conclusions.

2. Transformation process

In order to understand the financial market in this part of Europe and its characteristics, I will make some small excursion about the background of the economy under the communistic regime and about the privatisation process in Hungary, the Czech Republic and Poland. The first sub-chapter about the planned economy is based on Aslund's book called "Building Capitalism: The Transformation of the Former Soviet Bloc". The second sub-chapter is about a privatisation case in Poland. I decided to describe it chronologically. You can find more detailed information in the following papers: Jelic and Briston (2003), de la Rosa, Crawford (2004) and Cultler, Paszkowska (1996). The next part is about privatisation through a voucher program. A very good description of this can be found Hanousek and Kocenda (2003). In the last part you can find out about an unusual privatisation case in Hungary. This sub chapter is based on the Bornstein's (1999) paper.

2.1. A few words about planned economics

In the communistic system money was viewed as an accountancy figure without any meaning, because in an equal society you do not need money to satisfy your needs. This was the main role of the government, but you still have to count goods. This seems very strange and unrealistic, but that was the official communistic ideology. Under the communistic dogma, private property was not allowed, because it made the distribution of wealth unequal among the society. All industry and real estate assets in the country belonged to the citizens and in theory there was no need for private property. So under such a system there was no need for stock exchanges or stock corporations. On the other hand if something is a common good no one actually cares about it. According to planned economy theory it is possible to replace the price mechanism by a central planning process.

The main task of the central planning office was to set how much of a certain good had to be produced. Each factory manager received a production plan on a yearly basis from this office and he had to adhere to it and later report the production progress. However no one actually checked if the reported figures were correct or if the plan was being kept to, because there was a lack of incentives for the managers. In reality the planned production did not satisfy the needs of the consumers, which caused shortages of goods on the market. In the end, consumers had to buy products even if the quality was poor, because there was no other alternative. As the money was meaningless the prices were fixed by the central government. The output price was counted as cost plus a regulated mark up. The commodities, like raw materials and energy, were subsidised by the government. So there was no incentive to invest in new energy and less resource intensive technologies. There were not only shortages of goods on the consumer markets, but industry also had problems with raw materials and the spare parts. That is why the companies tried to maintain a high stock of the materials needed and spare parts. The investment decision about new machinery was also made by the central planning committee and companies had to wait sometimes years in order to get new equipment. Under the communistic regime there was officially no unemployment. Therefore in the companies there were too many employees and as a result, high personnel costs, but no one in the government actually cared about the financial condition of state-owned enterprises. As everything was constant, inflation did not officially exist, but in reality, prices did not represent the real value of different goods, because they were not controlled and set by the market forces. In the communistic system there was not any exchange rate and the holding of other currency and shares was restricted. The decision of purchasing another currency was planned and made centrally. This meant that world prices did not affect the prices of domestic goods.

A very important element of every economy is fiscal policy. In the communistic system nobody cared about it, because the Central Bank and the Ministry of Finance was subordinated to the Planning Committee. In that scheme, instead of controlling the budget policy these institutions were forced to do whatever the Committee told them. Independent funds existed too; these had their own revenues and expenses, and were not controlled by anyone. In the communistic budget there was no fiscal discipline. This caused expenditures to be higher than planned and there was not enough revenue to cover them. So to solve that problem the revenues were overestimated, restrictions were imposed on investment or the Central Bank printed the money. This is a broad overview about the planned economy under the communistic system.

The new government had not only to start the transformation of political systems, to make preparation for the first democratic elections, but also to start to introduce capitalism as a major economical system. That is why the Planning Committee was abolished and managers got the power to decide about day-to-day operations. The government started to implement a privatisation strategy and prepare the first companies into initial public offering. Of course each country chose different privatisation strategies. Later in the theoretical part I will explain in more detail which strategies are

available. One of the main tasks of the new government was to establish a stock exchange as a sign for investors that the transition process had started.

2.2. Privatisation in Poland

The privatisation process in Poland officially started in 1991, but the government had to solve some problems before. This country had a very high foreign debt and the assistance of the International Fund, the World Bank and the United States Agency of International Development was required. These high loans were made by the communist government in the 80's, and later the repayment was stopped. That is why Poland needed international aid in order to have funds for the transformation process. The second problem that the new government was facing was very high social expenses. This was the legacy of the communist regime. The new government had to use drastic cost cuts in order to stop this huge deficit and receive the international aid. One of the expensive posts was energy, capital and raw materials subsidies. For some companies this was a big shock and in some cases this cut of cheap input caused insolvency. The other problem that government was facing was how to privatise the companies. Economical advisors proposed two solutions: transform state-owned companies into JSC, in which the State Treasury will hold shares or privatise them fully. The advocates of the first possibility claimed that the "rationalisation of management" could be made without privatisation. It is worth mentioning the fact that in this scenario the government could choose 2/3 of members of the supervisory board and 1/3 would be selected by employees. The main task of such a supervisory board was the selection and monitoring of management, allocation of profit and investment and decision about the sales or lease of the company's assets. Although the position of the workers in the board was weaker, because they had smaller influence on decisions and the employee's council would be eliminated, they received some incentives. They did not have to pay tax on excessive wage growth (JSC were excluded from this tax) and they received job guarantees. Opponents of this idea argued that only the transformation from state-owned companies into JSC was not enough and privatisation was required. They argued that there was no difference in the role of state-owned enterprises and JSC. The opponents were concerned that these boards chosen by the ruling party would not have the ability to make tough and unpopular decisions. They believed that only privatisation could provide the urgently needed infusion of financial, human and physical capital, which would help the restructuring process. The early post-communist government decided to transform state-owned corporations into JSC without privatisation, because it would improve corporate governance and companies would be better prepared for privatisation within the next 2 years.

Towards the end of 1990 the government started part of the privatisation program using private placements. The idea behind this partial sale was testing the interest and willingness to invest in Poland. By the end of 1991 the first 7 companies had been sold to international investors. One of the first investors was Fiat to whom a 51% stake of Polish car manufacture for \$ 800 million was sold. In April

1991 the initial public offering of the so-called “First Five” began. These 5 companies were placed simultaneously on the stock exchange. This IPO was also an exception, because the enterprises were sold directly through financial markets by-passing the phase when the company was operating in the private sector. Later all IPO came through this step. The reason for such an unusual decision was the willingness to attract international investors and establishing an operating stock exchange. The change in the ruling party due to the election in 1993 brought a shift in privatisation politics. The new cabinet favoured mass privatisation. In 1995 Parliament passed new legislation that allowed corporations without privatisation and privatisation in branches like energy, telecommunication and banking, which required the government’s special approval. This legislation was vetoed by President Walensa. After his defeat in the presidential elections, the parliament passed the Law on the Commercialisation and Privatisation of State-Owned Enterprises in 1996, which modified privatisation rules. The new legislation made the transformation of state-owned companies into corporations easier, because the agreement of managers and workers was not required any more. However it allowed the change of SOE legal form without privatisation.

2.3. Privatisation in Czech Republic

At the beginning of the privatisation process in the Czech Republic there was some opposition from the managers of state-owned enterprises and some government officials. They wanted to slow down this process and make only selective privatisation, but they did not succeed. The government decided to make a full-scale privatisation program which consisted of 3 sub-programs: restitution, small-scale privatisation, large-scale privatisation.

In 1948 the communist regime nationalised all companies and real estate assets by force. After the regime fell, the new government wanted to settle all liabilities with the former owners. The amount of money used for the restitution program was very imprecise, because the government had to negotiate with representatives from former owners in each case. There were 200,000 claims for agricultural land and about 70,000 buildings had to be returned to former owners. The problem with the former factory owners was solved in the following way: During the communist era some of the companies were merged together and therefore it was not economically wise to split them. That is why stakes were proposed to the former owners in newly privatised companies. In addition they could buy additional shares on preferable conditions. The favourable conditions were: the shares were priced on the basis of book value and former owners did not have to compete with other buyers.

The small-scale privatisation applied for small companies, shops, restaurants, that were sold through public auctions. The bidding process was restricted only to Czech citizens or corporations founded by such citizens. Buyers were prohibited to transfer their ownership to foreigners. There was also no limit to the size of the company, but most business came from the retail branch. By the end of 1992

22,000 business entities sold had been sold. In 1993 the program was officially terminated. Until then the privatisation value had reached 30. 4 billion Czech crowns.

The large-scale privatisation was started in 1991. The corporations not submitted to the first two sub-programs were classified into the following groups:

- firms to be privatized in the first and second turn
- companies to be privatized later (after 5 years)
- enterprises to be liquidated

Half of all the suitable companies were assigned to mass privatisation in the first wave, which started in June 1991. Each of these corporations had to present its own privatisation program and submit it by end of October 1991. The managers of enterprises could choose their privatisation strategy freely. Such a strategy could involve more than one option of privatisation. The managers could choose from the following ways of privatisation: direct sales to domestic or international investors, public auction, and public tender offer, privatisation through stock exchange, and transfer to workers or participation in vouchers program. The privatisation program should also additionally include a solid business plan including operational expenses, future investment, profit or lost forecast and foreign trade during the period 1989-1991. The third parties, like investment banks or consulting companies, could also submit their own privatisation plans to the Ministry of Privatisation. It was also possible to make the privatisation program for parts of companies. The founding ministry and the Ministry of Privatisation decided which of the competing programs would be accepted. The sales to foreign investors required additional acceptance from the government. The number of all privatisation programs submitted was about 1.5 times the number of companies privatised. The management projects accounted for about 20-25 of all programs. Half of which was approved by the ministry. The second most commonly submitted plans were purchasing the whole or part of companies. 998 of 2044 enterprises decided to allocate their shares into a voucher program. The majority of companies distributed more than half of their shares through a voucher program. The Czech voucher program was strongly supported by the government as the fairest distribution of shares to the society. According to this privatisation strategy each citizen above 18 years of age received a voucher, which could be exchanged for a certain amount of shares. At the end of 1996 most enterprises were privatized and the railways, postal service and national airlines were in state-owned hands. The banking, telecommunication and utility sector was fully in private hands, however the state still had a minority in these enterprises.

2.4. The privatisation in Hungary

The transition process in Hungary is a bit unusual, because during the communist era some open market mechanisms were working. Some of the economical reforms started in 1968 during the Hungarian

revolution. The government introduced a new economical program called the New Economic Mechanism. It abolished the annual output assignments and allocation of resources to enterprises. Without any restrictions the companies could decide about the output, input qualities and price policy. The incentives received by workers and managers were linked to the profit. However the companies operated in a highly regulated market where the state-owned companies could exercise their power and intervened in different ways into enterprise activity. On the other hand, this program created incentives for small companies that could operate on the market where the state-owned corporations performed poorly or there was a lack of goods and services. Until the fall of communism the program was modified many times. Some of these changes represented a step forwards or backwards, but the main idea that allowed the operation of small companies was not changed. In the mid 80's the idea of ownership changed. In 1984 the Enterprise Act was introduced, which granted the company's councils the right to create joint ventures with other state-owned corporations or private companies. 4 years later a new so-called Company Act, which allowed creating commercial companies by state-owned enterprises, was passed. Some of the state-owned corporations founded companies that operated some of the plants, and the other state-owned corporations became holding companies for these new corporations. In 1989 the Transformation Act was passed, that allowed state-owned companies to convert into joint stock companies JSC. The government retained only part of the shares. Some of the shares were sold to other Hungarian companies, individual investors and to international investors. Up to 10% of the shares were sold on a preferable condition to employees of the companies. The whole privatisation process in Hungary was based on partial privatisation, the foundation of corporation and the exchange of inter-enterprise ownership.

3. Motives for going public

Companies go through several life cycles as they grow. One of them is IPO. Several theories try to explain why companies decide to go public. Companies reach a certain point in which additional capital is needed for further growth and one of the many possibilities is initial public offering. However the privatisation or deregulation process can also be a trigger for IPO.

Until 1980 IPO was seen as a stage in the growth process of companies. The financial market gave the evidence that this theory is not true. In the 80's in the US large numbers of big mature companies went private and were delisted. The trigger of this big delisting was the leverage buyout wave. Kaplan (1991) finds that only 50 % of delisted companies went public again. He found out that 7% of this sample went private again.

3.1. Value maximizing principle

Zingales (1995) says that the decision to go public is based on the value maximizing principle, because the owner wants to sell his company at the highest possible price. According to his explanation the initial owner changes the distribution of cash flow and controlling rights by sharing them with potential buyers. This is a bargain process between new shareholders and owners. The owner will try to maximize his utility function, lose as little control as possible and sell shares at the highest price. Since the market of corporate control is not competitive the owner has to adjust his utility function in order to make a placement. The author identifies two sources of the buyer's higher valuation that he tries to measure: cash flow and control. These two sources have a different nature. Cash flow is distributed among all shareholders. The amount of cash received is proportional to the size of equity. The market for cash flow rights is fully competitive for small shareholders, because the ownership can be easily changed. For the incumbent it is most profitable to sell shares to small, dispersed shareholders. The market situation for controlling blocks is different, because there are few institutional investors that have the resources to acquire the rights and they have more bargaining power. For the incumbent it will be difficult to sell his ownership with maximal value through the bargaining process. The author concludes that IPO gives a fair value for the owner without the bargaining process. According to Zingales the value maximizing principle is to hold the company private and bargain with a potential buyer. The only reason why an owner is willing to sell his company is the value maximizing principle.

3.2. Technological innovation

Maksimovic and Pichler (2001) examine the technological innovation and its influence on IPO. They find out that in the sector where there is a significant entry-risk there will be large amount of IPO, because the first initial public offering in a particular branch will attract other similar companies at the same time. The authors claim that if in the industry, the technological risk is big, financial markets will be able to support only a few IPOs. In this situation only the industrial pioneers will be able to make IPO. Non-industry pioneers have to wait until the technological risk decreases and this will attract new IPO. The authors conclude that the decision about initial public offering is a strategic decision due to the fact that it requires the company to disclose some information about the product, research and development. It is possible that potential rivals may acquire vital information from this and in the future this could reduce the company value. The amount of disclosed information may also affect the amount of potential new initial public offerings. According to the authors the underpricing effect is different in different industries. This theory is rather applicable for a new industry, because the technological edge amongst the competitors is crucial and disclosure rules may reduce it.

3.3. Market timing theory

Lucas and McDonald (1990) develop an asymmetric information model. The main idea behind this model is that the managers know the current earnings of the company and this information is unknown to the market. After the earnings announcement two situations are possible. If the enterprise was under valued, the stock price will rise. If the company was over valued, the share price will fall. The managers act in the interests of the shareholders and in order to finance a project, wherefore the equity issue is necessary. According to the authors, if the project is seen in the long-term, and no waiting costs connected with postponing the project exist, the enterprise can delay the issue until the undervaluation is corrected by the market. On the other hand if the shares are overpriced, the enterprise will quickly issue equity, because postponing may induce a loss of funds that are needed or a market correction could occur. (The price will fall). Ritter and Welch (2002) propose the following explanation for the market timing theory. It is not based on the asymmetric information assumption. The entrepreneur through day to day involvement can more or less estimate the value of his company without the influence of financial markets. The sudden changes of the share price of listed companies do not quickly influence the judgment of the entrepreneur's company value. After a certain period of time the owner makes the adjustment. In the end if the financial markets are influenced by irrational motives or the entrepreneur's judgment about the company's true value is influenced by sentiments, the entrepreneurs are more willing to sell their company only when the value is increased in the public markets.

3.4. Privatisation

In Eastern Europe the privatization process was the essential step required in order to transform the economy and it can be seen as the motive to go public. Under the communist regime private property was not allowed. For this reason the owners of factories, mines, and large real estate had to give up their ownership with small or no compensation. It was common that the government forced the owner to give up their owner's rights. According to the communist ideology all enterprises and real estate were in the government hands. One of first problems was how to privatize the state-owned companies. This issue was urgent, because the government was anxious that the privatization would be stopped by the managers or the managers would try to snap up some of the most valuable assets. At the beginning there were some practical problems that had to be solved before the state-owned companies could be sold. The most important was how to evaluate a company that had poor accounting standards, and sales and costs figures which were unreliable. Therefore it was hard to estimate the residual value. The other problem was that households did not have sufficient funds to buy shares of the newly privatized companies. The banking system was also too poorly developed and was not prepared to provide loans for the citizens.

Brada (1996) describes the methods of privatization used in Eastern Europe. The first method is privatization through restitution. The restitution means that the previous owner can regain his past ownership from the state. Normally the restitution involves buildings, land and real estate. The speed of this process depends on the ability to identify the previous owners and the political attitude. Theoretically when the previous owner gets his land, he can decide freely what he wants to do with it, but in practice, politicians impose some restrictions; for example: the owner has to continue the farming production. In the case of bigger properties like mines and factories the restitution problem was a bit more complicated due to the fact that some of the previous owners were dead and the heirs had to be identified. In order to start the privatization process all legal matters considering the previous owners have to be settled. These problems were solved by giving the former owners cash or vouchers.

The next method is privatization through the sale of state property. If the previous owners were unknown, the government could sell the stakes in newly privatized companies to workers, management or investors at a fair price. This method sped up the restructuring process of enterprises, lured international investors and produced tax revenues for the government. The politicians often discussed if it would not be better to first capitalize the state-owned enterprises and sell them later for a higher price. This strategy was used in the United Kingdom and Argentina, but the situation in Eastern Europe was different. There were a lot of state-owned companies and the government wanted to sell them as quickly as possible. The most successful part of privatization was selling small enterprises like shops, restaurants and service entities, because it helped to create small business. In Hungary the state-owned companies were required to convert themselves into corporations and sell their shares to a government agency called State Property Agency (SPA). It prepared and selected the companies for initial public offerings, management buyouts and it made negotiations with the potential international investors. The state companies were also allowed to find investors themselves. According to OECD report, up until end of 1993, 30% of SPA capital was privatized. The foreign investors played a major role in this time, because they brought capital, technology and know-how. The author also identifies some of the problems of the implementation of this method. This process is very slow. The reality showed that SPA was very inefficient, because it only passively controlled the state-owned companies without proper control over the managers in these companies. The managers were very often engaged in dubious privatization process, because they used their position to snap up profit from the sales of the enterprise. The political struggle between the parties was also visible in SPA, because the people in the key positions were very frequently changed and this constant reorganization influenced the speed of the privatization process. After 1995 the best companies were already sold and it was hard to attract new foreign investors to acquire the rest. That is why the revenue from the privatization sharply declined.

The next method is a voucher or a mass privatization. The voucher is the right to get a one-unit share in a privatized company. In this program the vouchers are distributed among citizens at no cost or at a nominal value. In Czechoslovakia (later the Czech Republic) state-owned companies were required to

transform themselves into a corporation and the selected ones had to prepare the privatization plan. The government allowed outside parties to prepare such plans for the state-owned enterprises. This option was very popular by outside investors and for each privatized company there were 4 different plans given by outside parties. Due to this some of the enterprises were privatized on a non-voucher basis. In order to participate in the bidding process for the enterprises the citizens had to buy booklet of coupons for \$1.25 and then register for \$35. Then the bidding process took place in rounds, five for the first round, and six for the second round. Before bidding the citizens could put their booklet into the Investment Privatization Fund, who would bid for the investors. Generally, the privatization was very successful, because between 60 and 90 percent of all state-owned enterprises were held in private hands. Potentially the problem which could arise is with investment funds. According to the author, the 14 largest funds manage about 55 percent of all vouchers. Most of the funds were founded by banks. This central share-holder model is very similar to the German and Japan shareholder structure where the banks have a certain influence over the companies. This method was used in Poland too. The voucher privatization started in 1994. The National Investing Fund (NFI) was founded and 33 percent of shares in privatized companies were transferred to this fund and it obtained four of the nine seats in the supervisory board too. This entity was organized as a close-ended mutual fund. Each citizen received one voucher, which is a share of NFI. The draw back of this method in Poland was that each individual citizen had too little power to influence the decision made by NFI. After the distribution of voucher in Poland there very quickly appeared individuals who bought the vouchers in order to consolidate the dispersed ownership.

The growth of small companies was not only stimulated through privatization but also from start up companies. Managers or workers of state-owned companies started their own companies. Soon they began to lease or buy particular assets from state-owned companies. Some of the state enterprises went into bankruptcy and some entrepreneurs acquired assets this way. Of course there were some cases when the managers of state-owned companies used insider information in order to acquire the most valuable assets for a small percentage of their real value.

3.5. Political reasons

Biais and Perotti (1995) concentrate on the privatization process in their paper, when the rational reason for going public is absent. Such a situation is possible when there is a sudden change in the politics toward the market like in Eastern Europe; where the market structure is changing from a command economy into an open economy. From a theoretical point of view the value maximization method of privatization would be the public tender sales. However the empirical research shows something different. The sales of state-owned Eastern European and British companies reveals following similarities, according to the authors. Firstly, the sales of the stakes are partial and the government retains some control over the company in the form of golden shares or a control stake. Secondly, the privatized companies are sold at a discount compared to the traditional IPO. According to the authors this effect

cannot be explained by asymmetrical information over the asset value, because most of the privatized companies are large, well known corporations with a long track record. When a company is state-owned there is always an incentive to relocate some of value to insiders, regardless of their performance. This leads, of course, to the destruction or the loss of a company's value. However if a company is privately owned, the government is unable to perform such actions without violating the law. Of course it is possible that the government can pass new laws which allow the regaining of control over the private corporations. This political risk is included in the company's sales price and it is in the government's interest to maintain clear and unchanged policy toward private companies. With time and with political stability the political risk decreases. The model of Biais and Perotti provides proof that in the privatization process involving several state-owned corporations the government will try to maintain a stable policy toward private companies in order to get a fair sales price. The authors suggest that underpricing and a stable policy give positive signals to the investors about the privatization process.

As I previously mentioned, the situation in Hungary, Poland and the Czech Republic was very specific, because the whole economy had to be transformed. As the praxis shows, the privatization process is a very sensitive political issue setting aside the country. Moore (1992) describes the privatisation process in the UK. This process has many similarities with what Hungary, Poland and the Czech Republic experienced, because the politicians faced the same problems in these countries in respect to the inefficiency of the state-owned sector. One of the many problems connected with privatisation is the wide acceptance of this idea among the society. The British government solved this problem by educating the people about the efficiency of capital markets through seminars, speeches, public discussion with journalists, financial experts, people and politicians. According to the author the best way to convince the doubters was to make the whole process quick and transparent. This strategy was very successful, because every UK privatisation of state-owned companies was oversubscribed. The state ownership in UK and in the command economies have shown that it is a very inefficient way of managing companies, because politicians tend to interfere with the day-to-day operations. This influence on the operation is visible by: setting unrealistic prices, making investment decisions using a political key and a lack of control over the expenses. Over the long run such companies lose their competitiveness and the bankruptcy probability rises. On the markets which are dominated by the state-owned companies there is no incentive to develop better products or services to customers, increase efficiency or cut costs, because no one is interested in such actions. In this market there is no motivation to deliver better products or services, because there is no reward or punishment for the service and product performance. For this reason the state-owned enterprises rely on government help and therefore perform poorly. When there is a sudden change in the buyer's behaviour and the state-owned companies start to lose their market share, they demand that the government should undertake some actions in order to stop that process. In the end there is no innovation or efficiency on the market and this status quo is held from the tax-payers money. There is one more aspect that it is worth mentioning. In state-owned companies virtually every

citizen is the owner of it and this means that actually no one can be held responsible for the company. The privatisation process changes this situation, because when you are the owner of something you care more about it and therefore the individual ownership is more efficient. According to the author's opinion the role of the state should concentrate on the regulation instead of management activities. When the government plays the owner role in the enterprise, most of time is consumed by the operating decisions concerning the company. The author analyzes the debates in the British parliament after World War II and he found that most of the time was devoted to operating problems of the state-owned corporations. The privatisation process relieves the government from the managing activities and allows it to concentrate more on regulation tasks such as consumer protection. Very often sales of state-owned enterprises is viewed by the politicians as a threat to the national interests, because the investor can close factories, reduce the labour force or transfer vital technology out of the country. In order to secure the national interests very often the government keeps control stock and this protects the national interests.

Åslund (2002) describes his experience with the privatisation process in Eastern Europe. He proposed two kind of privatisation. The first one is to make the privatisation process very quick. According to him the government should identify the most suitable companies and start to privatise them. In this situation the new privatized enterprises will obtain financial and technological assistance provided by the new owners. This was particularly important for large formally state-owned companies, because their competitiveness was very poor. The main reason for such a situation was under investment in new technologies and machines or poor and unmotivated management or a lack of appropriate financial control or a combination of all these factors together. Therefore quick privatisation enables inefficient enterprises to change into efficient ones and these can support the country's economy. The drawback of this quick method of privatisation is that the companies are not well prepared for this process. For example the enterprise has liquidity problems or there are still some unclarified legal matters. This means the company is worth less and the investors are concerned about the potential risks. Therefore the government will get less money for it. This situation was very often used by political opponents as an argument for selling state-owned assets below the market price. Another problem that can occur is that the investor may potentially have problems with dealing with day-to-day operation. As a result the company will go into bankruptcy. Unfortunately, sometimes a drastic restructuring program is connected with the mass lay off of employees and this creates large social costs for local communities, because this process is very rash and people are not sufficiently informed about the potential costs of privatisation.

The government can also choose to slow the privatisation process down. If it chooses this option, the selected companies have more time for privatisation. The state can restructure companies and make the necessary preparation for possible high social costs. This time can also be used for the information campaigns about the aims and profits of privatisation. In this case the government can sell enterprises for a higher price. On the other hand, if necessary, privatisation is postponed, and there is a danger that it will not be realised after all. The political factor also plays a major role in such situations, because there could

be different lobbies that actually want to take over the valuable assets, without paying its current market price, and they put pressure on the government to stop the privatisation process. Such a situation actually happened in Russia. In the early 90's lots of companies were privatised and sold to different investors, but later the government changed its attitude and policy towards the privatisation process. In reality it actually stopped it. The reason for such a shift in policy was that different interest groups were interested in taking over the corporations without competition from the international investors. Another motivation not to fulfil privatisation to the end is, so called, "national security". Under this definition politicians understand their own party interests, because if all state-owned companies are sold, there are no lucrative positions in the supervisory boards for politicians. The political stability influences the process, because frequent changes in the ruling parties do not allow crucial decisions about the privatisation to be made. This of course has a negative impact on the companies, because some of them will not survive without quick and proper privatisation. Such weak corporations unnecessarily burden the country's budget. In the end there is less to privatise and the high revenues which had been expected from privatisation are never be realised.

4. The underpricing in literature

In this part I would like to make the reader familiar with the various theories about the underpricing effect. Generally in literature there are two kinds of underpricing. The first one is short-term underpricing. It takes place up to one year after IPO. The second one is long-term underpricing and it is observed from one year to three years after IPO. The underpricing effect was first identified by Ibbotson (1975). In his paper he gives different possible explanations as to why you can observe such abnormalities on the financial markets. Ibbotson's reasons for this effect were later further developed by other authors.

4.1. Short-term underpricing

If investors are better informed about the market than the IPO issuer, then the issuer will face the problem with the placement of his shares. The issuer does not know how much the investors are ready to pay for his share and therefore the demand for stocks cannot be estimated. The first three theories are based on this assumption.

4.1.1. The Winner's curse theory

The winner's curse theory describes the following case. An investor will receive the full allocation of shares only when he is in the group of optimistic investors. In other words the IPO is not overbooked. When everyone desires the offering, the allocation of shares will be adjusted. In this case the investors

will receive less than they wanted. Therefore their return will be lower. On the other hand the investor will only receive the full allocation when the IPO is overpriced. Koh and Walter (1989) make an empirical research of this theory on the Singapore stock exchange. They found that the winner's curse can be observed in the praxis. Carter and Manaster (1990) find in their study that the reputation of the investment banks can be connected with the risk of IPO. The more prestigious investment houses tend to have less risky IPO. In order to keep a good reputation, the banks tend to sort out less promising IPO's on the basis of information not available to the investors. This asymmetric information is included of course in the IPO price. Therefore the investors are willing to accept lower returns as the cost of lower risk. The authors find that the reputation is highly correlated with the size of the issue. It means that the smaller IPO will be underwritten by less "famous" investment houses. Michaely and Shaw (1994) in their paper try to find the answer for the question if the underpricing is a sort of reward for the uninformed investors that they get less attractive IPO. They find out that if the IPO market is homogeneous there is no underpricing effect. The homogeneous IPO market is defined as the market for the initial offering of master limited partnership. This market's characteristic is that it is avoided by institutional investors, who tend to be better informed than the individual ones. They find the support for the correlation between IPO returns and the reputation of the investment bank. They conclude that the underpricing has something to do with the reward for the information asymmetry on the market and subscription for attractive IPO. Ploog and Stolpe (2003) try to find possibilities to reduce the underpricing, and as the consequence, the asymmetry of information on the IPO market. They propose the following solution for this problem. The government should create a long-term privatisation program in order to stabilize the primary market. This strategy should harmonize the number of IPO on the primary market. The other suggestion made by the authors is the introduction of regulation rules that forbid insider subscription. The author's intention is not to restrict independent price setting and the allocation of shares made by investment banks through government regulation. However the government should make profits from selling shares.

4.1.2. The information cascade theory

The information cascade theory describes the behaviour of investor who tries to judge the interest of the other investors. If an IPO is seen by the market as hot, it means that there will be a lot of interest from the investors and the issuer will manage to make a full placement. However, if the set price is too high, it raises the probability that the IPO will be a complete failure, because it will not attract enough investors. That is why underpricing is a method to attract investors. This theory was proposed by Welch (1992). The empirical test of this theory, made by Amihud, Hauser, Kirsh (2002) on the Tel Aviv stock exchange, shows that the investors tend to either oversubscribe or to show little interest for a particular IPO.

4.1.3. Bookbuilding theory

The “book building” theory helps the investor to acquire information from more informed investors. This point of view was first proposed by Benveniste and Spindt (1989). The investment bank set the preliminary IPO price and then the underwriters go for the so-called “road show” in order to present the enterprise to different investors and also to stimulate the demand for the issue. The offering price is not based on any particular rules, but on the investment bank’s judgment about the investors interested in considering this particular IPO. The demand for IPO is based on the information gathered by the investment bank. If the demand for stocks is high, the investment bank will set a higher price. Of course, the investors are aware of such behaviour and in order to encourage them to reveal their true interest some benefits must be offered. Such a benefit is a combination of underpricing and a more favourable IPO allocation. One of the first empirical studies about “book building” theory is made by Hanley and Wilhelm (1995). They found that 70 % of underpriced shares were allocated to institutional investors in the period 1983-1989. The over- and under- subscription of IPO does not change the allocation pattern of investment banks, because the institutional investors are always favoured. They found that the underwriter does not adjust the offering price when the demand is strong. However when the underwriters make an offering price revision the underpricing is higher. Ritter and Welch (2002) found a similar pattern. The authors claim that extra underpricing is a necessary reward for the investors for revealing their demand for shares. Cornelli and Goldreich (2002) analyse the booking process of 39 international equity issues in their paper. They found that the investment bank allocates on more favourable basis to the bidders who reveal their price limits rather than the bidders who give quantity limits without price limits. The bidders who adjust their bids receive the same good allocation. This adjustment can be interpreted as providing additional information to the investment bank. The authors also found that the bidders who participate in a large number of issues receive a more favourable allocation. However this does not influence the investor’s abnormal returns.

4.1.4. Lemon problem

If the issuer is more informed than the investor, he is facing the so-called lemon problem. This problem can be described in the following way. Only issuers with a worse than the average quality are willing to sell shares at the average price. The issuer will of course want to differentiate from the poor quality offerings and therefore will attempt to signal their good value. In all signalling models the underpricing is seen as a deliberate action in order to discourage other low quality issuers from imitating. Only high valued companies can afford to throw away money in order to convince potential investors about its quality. The money left on the table can be seen as the signalling action about the company’s quality. For scholars it is still unclear why underpricing is more convincing than commitment to spend money on charitable donations or advertising. One of the first researches which deal with this subject is

the paper by Leland and Pyle (1977). The authors claim that if a lender is aware of the full characteristic of borrowers both parties will benefit. However the moral hazard restrains the direct transfer of information between both parties. The borrowers and the lenders keep some information for themselves, because it may be profitable for them. For the third party it may be costly or impossible to verify such information. Good quality projects must transfer information to counter party in order to be financed. A straightforward information transfer is not possible and so that is why the entrepreneur will generate the information flow through its action. The disclosure rules can be seen as “the vehicle” of information transfer. If the company discloses that the person with inside information is willing to finance the project, it is a signal for an outside party that this project has good quality. The authors show that the entrepreneur’s willingness to invest his own resources in his project is a sign of good quality. In the literature you can find some other examples of positive signalling. Chemmanur (1993) tries to model the following hypothesis. The underpricing creates publicity about the company making IPO and it awakens the investor’s interest. The author’s model is based on the following assumption, that insiders know the true value of the company’s projects. They will try to spread information about the enterprise and sustain the awakened investor’s interest. The author concludes that only a low IPO price can sustain the long-term attention of potential buyers and only the high value enterprises can allow themselves a low issue price. Another example of positive signalling can be found in the following papers Courteau (1995) and Brau, Lambson, and McQueen (2005). The authors of both articles found that the long-term commitment of insiders to hold their shares is seen by the financial market as a positive sign. As I mentioned earlier, the reputation of investment banks is also viewed by the market as a positive impression about the quality of the company. Signalling is an important channel of information used by companies. It sometimes happens that enterprises deliberately generate false information to the market. Teoh, Welch, and Wong (1998) in their paper concentrate on the relationship between earnings reporting and underpricing. They found that extortionate earnings reported by the issuer because poor stock returns in the following 3 years after IPO. These results have an implication for the investors, the companies and the accounting standard setters, because the correct earnings are in many cases a screening factor used by potential IPO buyers. The extortionate earnings may lead them to make wrong decisions. Brau and Fawcett (2006) made a survey among the CFO considering “What *type of signal* do the following actions convey to investors regarding the value of a firm going public?”¹ The authors found that the strong historical earnings are viewed by the market as a good indicator for future performance. Other positive signals are a good underwriter reputation, big four accounting agency and backup by a venture capital company.

¹Brau and Fawcett (2006)

4.1.5. Insurance against legal liability

The US juridical system allows investors to sue the corporation if there is any suspicion that the selling price is not fair or there are some hidden risks not mentioned in the prospect. In Europe this practice is rather unusual. Only risk not included in the prospect can be a reason for suing the corporation. That is why I will only give a broad overview of this subject. Tinic (1988) and Hughes and Thakor (1992) came up with the idea that the underpricing may reduce the company exposure to potential legal liabilities. The reason proposed by the authors is as follows: When the share price falls below the issue price it means that the shares are overpriced. Unhappy about this fact the investors will try to sue the corporation in order to compensate the losses. Drake and Vetsuypens (1993) found that the underpricing does not protect enterprises from being sued. According to Lowry and Shu (2002) the company that underprices more is avoiding later legal liabilities. Ivo and Welch (2002) argue that “money left on the table” is the most cost optimal method of avoiding the legal liabilities. Keloharju (1993) found that in countries with no Anglo-American law system the underpricing is similar to the countries with this juridical system.

4.2. Long-term underpricing

Some scholars started to research how underpricing behaves in the long run. Assuming that the markets are efficient, it no one can make abnormal returns because all information is in the stock price included. The supporters of the efficient market theory argue that the price of listed shares reflect the whole intrinsic value. Generally, it means that the post IPO performance cannot be predictable. This makes sense only when the post-IPO performance has less IPO character and more asset price issue. However there are some cases that it is hard to sell shares short and therefore they retain IPO character. In the literature there are many different explanations of the long-term underperformance of IPO. Miller (1977) assumes that on the market there are some restrictions considering the short selling of IPO and the investors have a heterogeneous expectation considering the evaluation of the company. According to the author the IPO price is not set by the typical investor, but there is a small group of investors on the market, who are willing to take the risk and invest in the new issue. The biggest difference is in the opinion about the new shares until the IPO day. After that day revealed earnings, profit prediction and analyst coverage mean that divergence in the investor's opinion decrease and the investor's evaluation decrease to the mean valuation; the stock price will fall. The reason for this behaviour lies in decreasing risk. This effect is present on the small market where the float is small and there are not too many investors. In the praxis you can observe this behaviour when the period of lockup ends. Bradley, Jordan, Roten, and Yi (2001), Field and Hanka (2001), and Brav and Gompers (2002) find practical support for this effect. Bradley and others show that this negative effect is strong for the venture backed IPO. It is

typical for these IPO's, that the venture capitalist gives shares to limited partners on the lockup basis. It means that the owner is not able to sell shares before the expiration date, but after that time the authors observed that they sell them immediately. This can be observed because returns are negative and the volume rise sharply. Schultz (2001) argues that the larger the IPO group, following a successful IPO, the larger the last number of IPO in the sample; for example. In year 1 you have 2 successful IPO's; in next year you have 5 IPO's. When your sample consists of these 2 years then in the last year there is more observation and the results are influenced by the second year. According to the author, if each IPO is equally weighted then the last period influences the end result more and therefore the underpricing on average will be bigger. Ritter and Welch (2002) do not agree with this thesis, because each IPO is equally weighted and that is why the forecast cannot be underpriced.

4.2.1. Stockownership and IPO

Mikkelsen, Partch and Shah (1997) concentrate on the relationship between the stock ownership of managers and the IPO after performance of company in their paper. They analyse the sales figures and the stock performance of these enterprises from 1980-1983. The authors observe that the median of the income profit start to decrease during first year on the stock exchange. They do not find support for the thesis that the change in the equity ownership influences operating performance. The authors start to wonder why the managers change their stock investment in the company after IPO; however it does not influence the operating actions. The possible explanation of this behaviour is that the incentives that are linked directly with the performance of the stocks encourage the officers and managers to increase their investment commitment. This effect is observable in the first year after IPO. The reason for this delay is the underpricing of shares. Since the managers are willing to build up their stakes in the company this sends a positive signal to the market about the future earnings according to the signalling theory. However these actions may be made deliberately in order to increase the company value in the longer run. If the manager's incentives are connected with the stock performance they will want to maximize their personal profit. Heaton (2002) in his paper tries to find out, how the personal incentives influence the company value. His research is based on the assumption that the managers tend to overestimate the future earnings and to underestimate possible losses. In the literature it is unclear if incentives or "corporate culture" can eliminate the irrational behaviour. Managerial optimism about the future leads them to believe that the efficient capital market undervalues the company's stocks. That is why they see external funds as very costly and they choose to use internal fund resources. Of course this optimism causes forecast errors, because the managers tend to overvalue the project. This misleading information is interpreted by the financial market as positive and the stock prices rise. In the literature you can find examples that not only investors but entrepreneurs overreact too. Bernardo and Welch (2001) concentrate on the overconfidence of entrepreneurs in their paper. The main conclusion of their article is that the overconfidence can break the information cascade. In this case a huge demand for public information

aggregation will be created and the overconfident source of information will pay only small costs. For the financial market it means that the available information is useless, because it misses the reality basis. The investors must in such situations evaluate each piece of information and make corrections, if it is necessary. The overconfidence about the market also affects investors. Daniel, Hirshleifer, and Subramanyam (1998) try to analyse this effect. The authors found that the investors overreact to the private information and under react to the public information. As the result, a small group of well-informed investors can cause the stock prices to rise and the rest of the market follows this trend.

4.2.2. Impresario hypothesis

In the early literature about the long-term underpricing so-called “impresario hypothesis” appears. According to this hypothesis investment banks underprice IPO in order to create the illusion of excess demand. Companies with a higher initial return should have a lower return during the following years. Ritter (1991) tries to find an answer for the underpricing in the long run. He found that the buy and hold strategy for IPO shares gives small returns. The proposed reason for this situation is that the companies go IPO around the peak of industry and when it is reached the prices fall sharply. Similar research made in Switzerland by Kunz and Aggarwal (1993) shows that the three years return is positive. However if you buy shares in the first day of trading and sell after 3 years, your return will be negative. Loughran and Ritter (1995) found that the companies listed between 1970 and 1990 gave only five percent return over a five year period. The reason for such performance was an opportunity window that enterprises used to acquire capital. This period of time is also characterized by the investor’s willingness to pay a higher price for IPO. However the price should be lower according to the historical analysis of earnings. Rajan and Servaes (1995) using similar methodology find that many firms are willing to enter the market through IPO when the peer group has high multiples. The authors observe that these companies making initial public offering have poor performance afterwards. Similar research made 2 years later by the same authors gives the same result. The reason for this situation is that the parties on the market are overoptimistic about the future earnings and this influences the stock values. Jain and Kini (1994) identify possible reasons for past IPO poor performance in their paper. According to them, good pre IPO earnings create an illusion of the good quality of a company. Therefore the investors have a false impression about the enterprise’s true image. Some time after IPO the investor’s expectation cannot be met and share prices fall. The authors conclude that enterprise cannot sustain their pre IPO results. Although sales and capital expenditure rise the companies are not able to be as profitable as before. The authors think that banks by share pricing assume that the future profit margins will exceed pre IPO levels. In reality they have a tendency to decline.

4.2.3. Marketing in IPO process

Lately in literature, scholars have started to investigate the role of marketing in the IPO process. It is important to know to whom a marketing campaign should be addressed due to different marketing channels and strategies. One of the first papers that deal with this problem is research made by Ljungqvist and Wilhelm (2005). He assumes that on the financial market there are two kinds of investors: sentimental and regular (institutional). The issuer is, through different regulations and law, prohibited to make price discrimination among the buyers and therefore must set one price range for all investors. The investment bank manipulates the price in such a manner that the evaluation of IPO in the aftermarket trading represents only some fraction of the sentimental investor's evaluation. The sentimental investors get overpriced shares at the early stage of the aftermarket trading. Investment banks and the institutional investors benefit from this situation because the investment bank can set the price above the true value and the issuer knows that the institutional investors can sell them to the sentimental investors. The author makes the suggestion that the satisfied decision maker is more likely to choose once again the same underwriter for a secondary offering. This situation is possible only when the professional marketing strategy has been introduced. Of course, when such a situation occurs the regular customers of the investment bank will participate in this operation and they can earn profits. Derrien (2005) makes a similar research, but he concentrates on the price stabilisation in the aftermarket trading. This author assumes that there are two kinds of investors on the financial market: a noise trader (equivalent to Lingquist's institutional investor) and sentimental investors. The key factor proposed by the author is so called "bullishness". It simply measures the attitude toward the market by the noise traders and the sentimental investors and it is determined by the current market conditions. For example: the more favourable the attitude the noise trader has toward the IPO, the higher the IPO price. Generally you can say that the level of initial return is positively correlated with the noise trader sentiment. The price setting mechanism is similar to Lingquist's idea. However the issuer must provide a sometimes costly price support in the aftermarket trading. It means that if the share price falls under the IPO price, the issuer must buy shares in order to create a price rise. This of course creates a problem for the investment bank, because if the noise trader sells the overpriced shares to sentimental investors the price will fall and the price guarantee will be taken into account. In this situation the investment bank will face high costs. You cannot forget that the issuer's profit consists not only of the underwriting fee, but also of the possible price support costs. Therefore the price setting strategy must be well weighted in order to avoid unnecessary costs. The author suggests that the investment banks should consider a conservative price strategy and take into account short-term underpricing in the aftermarket trading.

The problem that the investment banks are facing is how to attract potential investors. In "hot periods" investors have a good choice of IPO's and the issuer has to fight for them. Barber and Odean

(2006) concentrate on how the investors choose shares in their paper. One of the problems that they are facing is connected with searching for appropriate investment. Since the investors have limited resources that they can spend on searching, their choice is based on the attention paid to the particular shares. In other words the more about IPO is spoken about; the more probable it is that the investor's awareness will be awakened. Based on brokerage data, the authors found that the investors buy attention-grabbing shares. Frieder and Subrahmanyam (2005) try to find out if there is a relationship between the brand of a company and the investment. They found that the individual investors prefer the shares of companies that have a high brand visibility. According to Cook and Kieschnick (2006) the methods used to reach individual investors have changed with the time due to technological development. Now it is possible to make road shows through the Internet. In 1997 the Securities and Exchange Commission allowed the use of this method to make company promotions. One of the first companies that used this technology was joint venture NBC and Microsoft. These enterprises made the road show video which was presented to the subscribers. In 1999 Charles Schwab and Company Inc. made road show meetings using the Internet as part of a promotion strategy. Nowadays this practice is quite popular for making a company presentation. The authors found that it is profitable for the investment banks to attract individual investors (sentimental) into the IPO market, because the institutional investors can sell overpriced shares. Of course, a satisfied issuer should reward the investment bank for such a favour while granting him another contract. Generally they observed that good publicity is a good measure of IPO success, because if, in the pre-IPO phase, there is a lot of "noise" about the company, it attracts institutional investors. According to the previous findings, the individual investor's willingness to invest in this particular IPO will be greater.

5. Sample and Methodology

The gathered data was acquired from Reuters system. It contains all companies listed on Warsaw, Prague and Budapest stock exchange from 1991 until 15.09.2006. The initial offering prices, used to calculate amount of money left on the table in Poland, can be found on the Warsaw Stock Exchange internet side. My methodology choice is based on Welch and Ritter (2001) and Lyn and Zychowicz (2004) papers.

For each company there was calculated a return after 3, 6 and 9 months and after 3 years. All prices used in calculations are closing prices. I used following formula in order to calculate the return:

$$R_t = \frac{P_t}{P_0}$$

where P_t is the price after 3,6,9 months and 3 years, P_0 is the price at the first day of trading, R_t represents the companies return after 3,6,9 months and 3 years

In the literature the underpricing for a single company is measured by the returns. If it is positive, it means that you can observe undervaluation. If the sign is opposite, it represents over valuation. The underpricing effect for the whole period is calculated by following formula:

$$U_t = \frac{\sum_{i=0}^n R_t}{n}$$

where U_t is underpricing effect after 3,6,9 months and 3 years, R_t represents the companies return after 3,6,9 months and 3 years, n is the number of companies on the stock exchange in the particular country.

In the second part of my empirical part I used regression analysis in order to see which factors influence this effect. After reading the literature about this topic, I chose following factors: P/E ratio, market capitalisation, the dummy variable - new or old industry and only in Poland the second dummy variable year. P/E ratio is used to distinguish between growth and value stocks. Market capitalisation represents the size of company. The second dummy variable tells you if the particular year influences underpricing effect. These factors are independent variables. The dependent one are stock returns after 3, 6, 9 months and after 3 years. The returns after 3 and 6 months represent the short time horizon. The other two characterize the long term horizon.

6. Descriptive Analysis

In this part I would like to show the results of underpricing for Czech Republic, Hungary and Poland. Every country section will begin with descriptive statistics of the sample. Then I will present the development of the IPO returns in chart form. In the last section I am presenting regression on return and analyze factors affecting it. The used data is the average return per year. The biggest stock exchange is in Poland and I will concentrate on this financial market.

6.1. Prague stock exchange

This is relative small stock market. The first IPO was in 1995. Until 2006 there were 32 new listings. Some of listed shares are illiquid and this might influence in minor ways the returns. The following table presents the summary of descriptive statistics.

	3 months	6 months	9 months	3 years
	descriptive	descriptive	descriptive	descriptive
	statistics	statistics	statistics	statistics
Average	0,0454	-0,0108	0,0595	0,1272
Median	0,0177	0,0413	0,0064	0,0000
Variance	0,060	0,1381	0,1776	0,4776
Standart deviation	0,24495	0,3716	0,4214	0,6911
Minimum	-0,49	-0,5586	-0,6510	-0,8152
Maximum	0,66	1,0714	0,8686	1,6687
Skewness	0,225	0,6061	0,1424	0,6194

Table 1: Descriptive statistics of IPO returns in Czech Republic

The average return measures how strong was the underpricing after 3, 6, 9 months and 3 years. After 3 months the average return was 4,5%. It means that the new listed shares were 4,5% under valued. You can observe that the average return increases with the time after IPO. The only exception is the 6 months average return, because it is negative. It means that the stocks were actually over priced. Variance measures how strong returns vary from the median. A high variance means that observed returns are very scattered. From the performance point of view it would mean that there are some shares that are extremely over or under priced. The minimum and maximum value will show in this case the extreme value. The presented sample shows increase of standard deviation with time after IPO. Skewness measures how the sample is distributed. When skewnes is positive it means that there are more values smaller then median – a sample is right skewed. The presented sample has small right skewnes.

The following table shows how the average return has developed on yearly basis.

	1995	1996	1997	2002	2004	2005
3 Months	11,02%	-9,64%	-0,50%	2,66%	16,15%	3,70%
6 Months	15,15%	-25,51%	-25,01%	7,16%	56,94%	14,47%
9 Months	26,41%	-4,68%	-29,07%	23,57%	72,18%	31,66%
3 Years	13,42%	3,88%	6,93%	166,87%	0,00%	0,00%

Table 2: Average return on Czech stock exchange on yearly basis

You can observe that in the some years, like 1996 and 1997 the shares were generally over priced except of 3 years average return. In 1995 the underpricing was very moderate. It did not exceed 15 % except for the 9 months returns. In 2002, 2004, 2005 there was only one IPO. Therefore these results are so high. The 3 years average in 2004 and 2005 is zero due to lack of observation data in this period.

In order to understand the paradox of underpricing in Czech Republic I made the time-series regression analysis. The dependent variable is the 3, 6, 9 months and 3 year return. The independent variables are P/E ratio, market capitalization and two dummy variables: new/old industry and liquidity. My H_0 hypothesis says that independent variable has influence on the return. In the interpretation of regression table I use 5% confidence level. The following table presents the result of regression after 3, 6, 9 months and 3 years after IPO.

	Regression on the 3 months results		Regression on the 6 months results		Regression on the 9 months results		Regression on the 3 years results	
	Coefficients	P-Value	Coefficients	P-Value	Coefficients	P-Value	Coefficients	P-Value
Intercept point	0,07	0,42	0,07	0,59	0,24	0,09	0,08	0,73
New/old industry	-0,08	0,76	0,04	0,92	-0,01	0,99	-0,08	0,92
Market cap	0,00	0,82	0,00	0,93	0,00	0,70	0,00	0,29
P/E	0,00	0,80	0,00	0,93	0,00	0,61	0,00	0,24
Liquidity	-0,03	0,80	-0,15	0,33	-0,32	0,05	0,06	0,83

Table 3: Regression results on Prague Stock Exchange

P-value helps to decide if the independent variable has influence on the return. If p-value is smaller then confidence level then H_0 hypothesis will be rejected. The interpretation of coefficients helps to find out how strong the particular variable influences the return. The regression shows that all of the independent variables have influence on dependent variable except for liquidity in the regression on the 9 months return.

6.2. Budapest stock exchange

There are 36 listed companies on the Budapest Stock Exchange. The shares are divided into 2 markets, which have different liquidity and disclosure rules. The first companies were listed in 1995. The following table presents the descriptive statistics of IPO return.

	3 months descriptive statistics	6 months descriptive statistics	9 months descriptive statistics	3 years descriptive statistics
Average return	0,0204	0,1412	0,2686	0,4426
Median	0,0170	0,0197	0,0706	-0,1250
Variance	0,0734	0,2725	0,5385	2,3285
Standart deviation	0,2710	0,5220	0,7338	1,5259
Minimum	-0,6225	-0,8713	-0,8200	-0,9263
Maximum	0,5935	1,3400	2,7624	5,3889
Skewness	0,2172	0,4554	1,3708	1,6530

Table 4: Descriptive statistics of IPO returns in Hungary

After 3 months the underpricing was 2% and this might mean that there was almost no underpricing effect. The underpricing becomes visible after 6 months and increases with the time after IPO. After 3 years the under pricing was 44%. The volatility in this sample poses interesting characteristics. When time after IPO increases, the volatility increases about 25%. This characteristic holds for the 3, 6, 9 months statistics. The exception from this rule is the 3 year volatility, which increases for 50 % in compare to the 9 month's volatility. The sample is right skewed. The next table shows the development of average returns on the yearly basis.

	1995	1996	1997	1998	1999	2000	2001	2003	2004	2005
3 Months	4,93%	44,21%	18,17%	-19,33%	-7,05%	-34,75%	-62,25%	10,12%	-1,44%	10,71%
6 Months	36,32%	63,96%	32,36%	-26,73%	-26,66%	-40,10%	-87,13%	82,42%	0,24%	13,93%
9 Months	69,50%	78,06%	20,45%	-27,21%	-15,45%	-51,54%	-82,00%	106,67%	10,58%	3,57%
3 Years	136,00%	-0,51%	-21,33%	36,75%	-57,88%	-34,75%	-68,75%	0,00%	0,00%	0,00%

Table 5: Average return on Hungarian stock exchange on yearly basis

In the short time the underpricing effect could be observed only in the period 1995-1997, 2003 and 2005. That is why the descriptive statistics on 3 months average shows no under pricing effect. This period of time with the over priced IPO is generally visible also by 6, 9 months and 3 year average return. In 1995 there was high underpricing was although after 3 months this effect was not visible, but after 3 years the underpricing had reached 136%. You can observe that in 1996 the 3 year average return is only 0,5% although 3, 6, 9 months show high under pricing. It is worth to mention that there were only 2 IPO in 1996. The similar pattern to 1996 is present in the year 1997, but the under estimation of company's value is not such big. The 3 year average is negative.

In the next part I would like to present the time- series regression analysis. The dependent variable is IPO return in 3, 6, 9 months and 3 years. The independent variables are new/old industry, illiquidity, market capitalisation and P/E ratio. In order to test all results I will use 5% confidence level.

Regression	Regression on the 3 months results		Regression on the 6 months results		Regression on the 9 months results		Regression on the 3 years results	
	Coefficients	P-Value	Coefficients	P-Value	Coefficients	P-Value	Coefficients	P-Value
Intercept point	-0,02	0,83	0,31	0,04	0,65	0,00	0,02	0,95
New/old industry	0,04	0,66	-0,07	0,67	-0,11	0,64	0,26	0,56
Illiquidity	0,02	0,84	-0,29	0,11	-0,64	0,01	0,01	0,99
Market cap	0,00	0,18	0,00	0,56	0,00	1,00	0,00	0,00
P/E	0,00	0,38	0,00	0,39	0,00	0,42	0,00	0,69

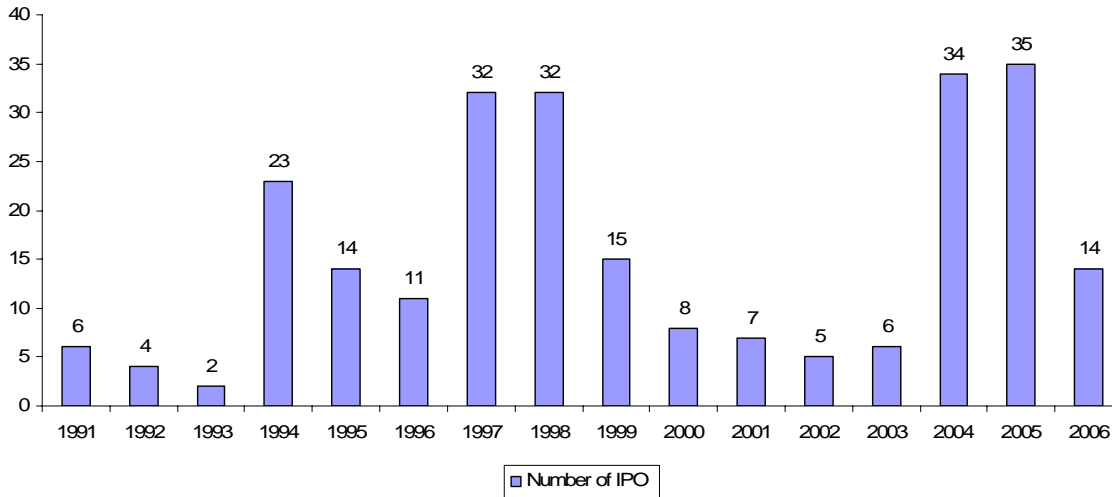
Table 6: Regression results on Budapest Stock Exchange

The regressions on the 3 months returns have shown that the under pricing is affected by all independent factors, but on the other hand the influence of these factors is minimal. The similar result shows the regression on the 6 months return. In the case of the long term underpricing (9 months) illiquidity do not have impact on the return. The market capitalisation and P/E ratio have minimal influence on IPO under pricing. The regression on 3 years return have shown that P/E ratio, Illiquidity and new/old industry influence IPO, but their influence is minimal. The variable "new / old industry" explains the underpricing in 3 years after IPO.

The short term underpricing was only present in the period 1995-1997, 2003 and 2005. The long term underpricing could be observed in 1995 and 1998. Generally market capitalisation, P/E ratio and Illiquidity have minimal effect on IPO valuation.

6.3. Warsaw stock exchange

This is the biggest stock exchange in Middle Europe. The first IPO was in 1991. Until 2006 there were 232 new listings. Some of the new listings were foreign companies like Bank Austria-Creditanstalt, Hungarian MOL. The following graph shows how many IPOs were each year.



Graph 1: The number of IPO on yearly basis in Poland

In the first years of the stock exchange existence the main driver of IPO was privatisation process of state-owned enterprises. Later this development was weaker due to the political changes. Politicians stop privatisation process. As you can observe in the following graph 1 the best years for Warsaw stock exchange were years 1998-1999 and the post internet bubble period. The world recession reached this financial centre and the number of IPO decreased. Until 2000 you can observe the following pattern. Each third year the number of IPO's sharply increase and later it slowly decrease. Nowadays the main sources of new IPO are private placements. Next I would like to present the results of the descriptive statistics.

	3 months	6 months	9 months	3 years
	descriptive	descriptive	descriptive	descriptive
	statistics	statistics	statistics	statistics
Average return	0,2195	0,2934	0,2972	0,8908
Variance	1,9859	3,4297	3,6637	34,4844
Standart deviation	1,4092	1,8481	1,9101	5,8600
Minimum	-0,9709	-0,9591	-0,9682	-0,9659
Maximum	14,0000	24,3571	24,3571	80,0000
Skewness	7,1799	10,0850	9,3049	11,1770

Table 7: Descriptive statistics of IPO returns in Poland

The underpricing is around 29 % in 3, 6 and 9 months after IPO. The average 3 year return is 89%. The 3 months variance is 198% and increase with time to 3400%. This effect can be observed on the basis of minimal and maximal value. This sample has very high right skewness.

The next table shows the development of average returns on the yearly basis.

	1991	1992	1993	1994	1995	1996	1997
3 Months	1,63%	0,00%	635,00%	-10,59%	68,01%	98,68%	40,70%
6 Months	-1,79%	0,00%	1341,98%	-1,11%	120,54%	129,70%	24,85%
9 Months	-13,83%	0,00%	1341,98%	-9,50%	118,06%	149,71%	16,89%
3 Years	1237,57%	2407,93%	178,50%	97,63%	128,65%	26,48%	-10,11%

	1998	1999	2000	2001	2002	2003	2004	2005	2006
3 Months	25,73%	2,71%	-28,36%	-30,16%	-35,10%	26,79%	1,65%	4,39%	3,60%
6 Months	-4,23%	-0,26%	-32,28%	-30,61%	4,54%	35,26%	2,03%	17,41%	0,00%
9 Months	-10,03%	13,98%	-52,76%	-24,63%	11,27%	24,03%	-0,49%	33,89%	0,00%
3 Years	-6,90%	-25,31%	-47,46%	105,44%	68,16%	0,00%	0,00%	0,00%	0,00%

Table 8: Average return on Polish stock exchange on yearly basis

You can observe that generally positive returns with some exception were present until 1999. The world internet bubble reached this market too, because from 2000 until 2002 IPO were overpriced. During these bearish years the IPO was on average 30% over valued. In the year 2000 there were only 8 new listing and only one was underpriced. In the next year there were 7 IPO and only 2 were under valued. In the last year of the recession there were 5 new listings and all were over priced. In 1994 company were 10% over valued. In that year there were 8 IPO and only 2 were underpriced. The biggest underpricing was in year 1996. Its value on the average was 98%. In 1996 there were 11 IPO and only 2 were over priced. 4 of 11 were more then 100 % underpriced. The following years after the internet bubble the average return was positive but the short term underpricing was very low compare to previous years. The average return 2003-2006 was 9%.

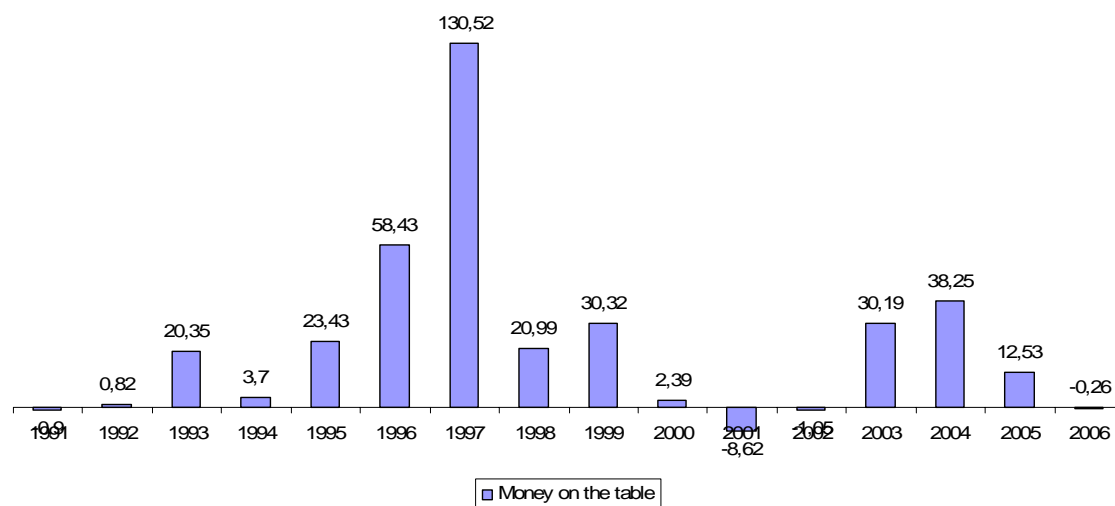
The highest mid term underpricing (6 months after IPO) was in 1993. The underpricing was about 1400%. In that year there were only 2 new IPO, but these shares were severe underpriced. In the next section I am going to explain why this year was extraordinary. During 1998-2002 the average overpricing was 16%. In 1998 there were 32 IPO, but 9 were under priced. In 1999 there were 16 IPO's and only 6 were under valued. In 2000 there were 8 new emissions and only one was underpriced. In the last bearish year there were 7 new listings and 3 were overpriced. The average under valuation in 2003-2006 was 14%.

The highest long term under pricing (9 months and 3 years after IPO) was in 1993 and its value was 1342%. The overpricing of IPO is visible in following years: 1994, 1998, 2000, 2001 and 2004. In 1994 there were 23 IPO and 2 were under priced. In 1998 there were 32 new listings and only 5 under valued. In 2001 there were 7 and only 3 were underpriced. In 2004 the underpricing is very marginal only -0,5%. The average under valuation in 2003-2005 is 14%. I do not take into consideration the year 2006, because IPOs are less then 3 months old. In 1991 and 1992 the long term underpricing is very high. In 1991 3 of 6 companies have underpricing more then 1000%. During next years this trend declines and

the underpricing is not so extreme. IPO's were overpriced from 1997 until 2000. It ranged in average from -10% till -47%. In year 1992 you can not observe any result, because historical is only available from 1994. From 2003 until 2006 the average is 0, because IPO was too short in order to calculate 3 years average return.

As you can observe the world recession was present in this market too. In the short time period it was observed during 2000-2002 period. When you increase your time horizon to 6 and 9 months, you can observe that the overpricing period starts in 1998 and lasts until 2001.

The next table presents how much money was left on the table. It is defined as the difference between IPO price and the first trading day. The currency that it is used on this graph is polish zloty.

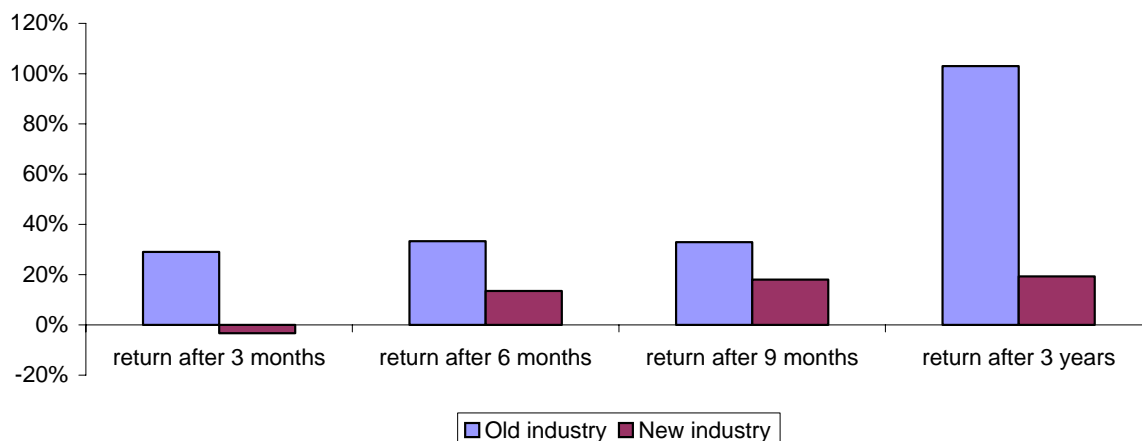


Graph 2: Money left on the table

The values on the graph represent the sum of money left on the table in particular year.

The average amount left on the table is 36 zloty. That is almost nothing. You can observe that there is any abnormal one day return. In that case the true underpricing can be only observed after 3 months.

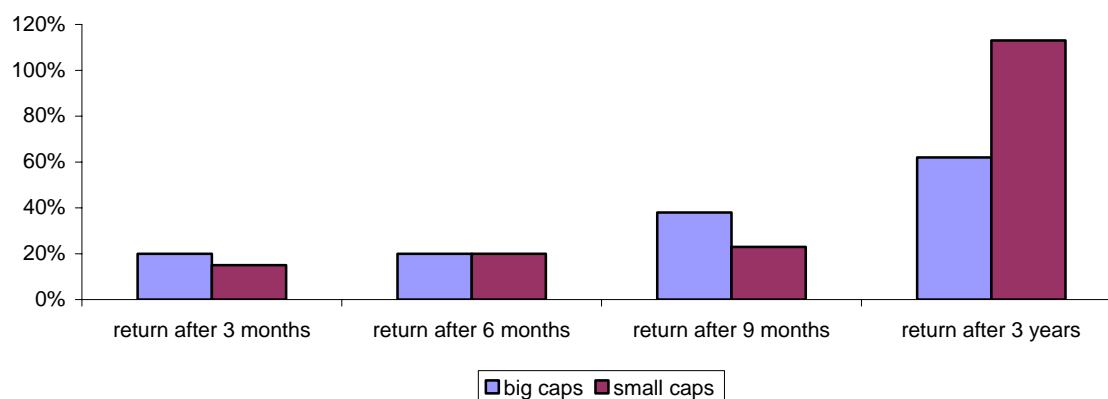
The next graph presents returns of new versus old industry. The new industry is defined as companies that are in new technologies branch e.g. bio technology, computers.



Graph 3: The old vs. new industry

As you can observe on the graph new industry was less under priced then old industry. In the short run new industry was slightly over priced, but when the time horizon is increased the under pricing rises to 36%. On the other hand old industry shows that in short run companies are moderate underpriced and this trend lasts until 3 years after IPO. After that time it increases sharply to 104%.

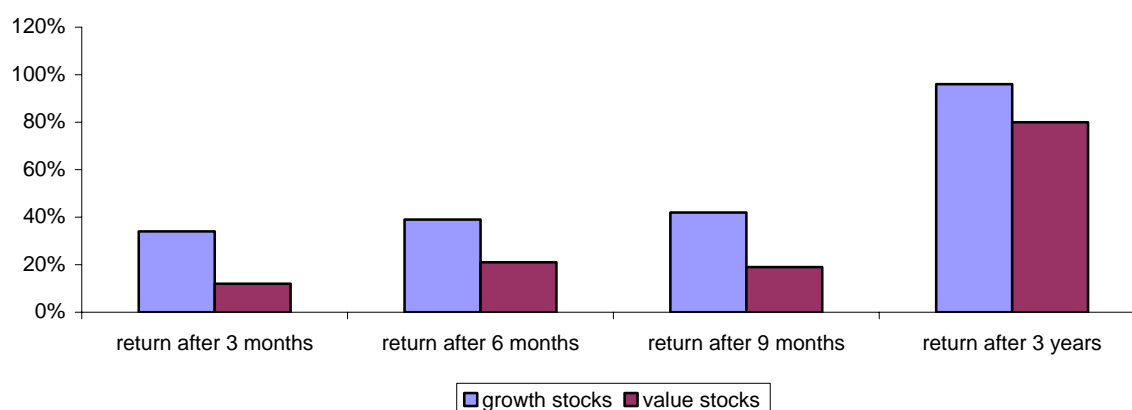
The next graph shows the return of small caps versus big caps. In order to distinguish between small and big company I took median of market capitalisation of all listed stocks. If the market capitalisation is smaller then median the company is assigned to small caps and if it is bigger then media the company is assigned to big caps.



Graph 4: Small vs. big caps

In the middle run there is any difference in the underpricing between small and big caps. In the short run you can observe that bigger enterprises are slightly more underpriced then smaller ones. In the long run big companies are more underpriced then small ones. From the graph 4 you can observe that the underpricing of big caps increase steady with time. In the case of small caps this increase is more irregular.

The next graph shows the development of growth versus value stocks.



Graph 5: Growth vs. value stocks

Value stocks are characterised by low P/E ratio. In order to distinguish between growth and value shares I took the median of all P/E ratios and I assigned shares with smaller then median P/E to value stocks. The stocks with bigger then median P/E ratio are growth stocks. The growth stocks are more underpriced then

value stocks. Generally growth stocks are small companies and they are seen as more risky by the market. That is why the investors require more risk premium.

In the next sub section I would like to present time-series regressions. The independent variables are P/E ratio, new/old industry, year of IPO, market capitalisation. The year of IPO is a dummy variable and tells you if year influence IPO return. The dependent variable is return after 3, 6, 9 months and 3 year after IPO. I use 5% confidence level to test results. The next table shows the regression on 3 months return.

	Coefficients	T-Test
Intercept point	-5,01E-005	,000
1991	,016	,011
1992	-,005	-,003
1993	6,350	3,953
1994	-,092	-,066
1995	,723	,532
1996	1,009	,736
1997	,407	,306
1998	,276	,207
1999	,067	,049
2000	-,213	-,153
2001	-,229	-,163
2002	-,276	-,191
2003	,286	,202
2004	,031	,023
2005	,071	,053
2006	,083	,061
Industry new / old	-,126	-,576
P/E	-1,41E-005	-,346
Market cap	5,98E-013	,104

Table 9: Regression results on the 3 months return

Following variables do not have influence on the return: year 1991, 1992, 1999, 2004, 2005, because their T-test is smaller than confidence level. The returns in 1991, 1992, 1999, 2004 and 2005 are not bigger than 5%. Market capitalisation, P/E ratio and “industry old / new” are statistically significant but their influence is minimal. The biggest influence on the 3 months average return had year 1993.

The next table presents time-series regression on 6 months return.

	Coefficients	T-Test
Intercept point	,001	,001
1991	-,019	-,013
1992	-,001	-,001
1993	13,421	7,990
1994	-,020	-,014
1995	1,263	,888
1996	1,285	,897
1997	,252	,181
1998	-,051	-,037
1999	-,025	-,018
2000	-,333	-,228
2001	-,339	-,230
2002	,008	,005
2003	,339	,229
2004	-,011	-,008
2005	,167	,120
2006	-,015	-,011
Industry new/old	,062	,272
P/E	-3,45E-005	-,810
Market cap	8,05E-013	,266

Table 10: Regression results on the 6 months return

Following variables do not influence return: year 1991, 1992, 1994, 1998, 1999, 2002, 2004, and 2006. Year 1993, 1995 and 1996 had significant influence on the 6 months return. P/E ratio and market capitalisation have very small influence on the return.

The next table shows the time- series regression on 9 months return.

	Coefficients	T-Test
Intercept point	,001	,001
1991	-,138	-,089
1992	-,001	,000
1993	13,421	7,581
1994	-,106	-,069
1995	1,233	,822
1996	1,480	,980
1997	,174	,118
1998	-,114	-,077
1999	,108	,072
2000	-,555	-,361
2001	-,297	-,191
2002	,056	,035
2003	,224	,143
2004	-,035	-,024
2005	,325	,222
2006	-,028	-,019
Industry new/old	,093	,389
P/E	-3,31E-005	-,736
Market cap	3,72E-013	,116

Table 11: Regression results on the 9 months return

The following variable do not have influence return: year 1992, 1998, 2002, 2004, 2006. When you look at the returns in these years you can observe that all are smaller then 11%. The return in 1994 is slightly above confidence level. The significant influence on the 9 months return has year 1993, 1995 and 1996. P/E ratio and market capitalisation have very small influence on the underpricing.

The next table shows time- series regression on 3 year return

	Coefficients	T-Test
Intercept point	-,001	,000
1991	12,375	2,433
1992	24,079	4,573
1993	1,784	,309
1994	,961	,192
1995	1,216	,249
1996	,247	,050
1997	-,119	-,025
1998	-,086	-,018
1999	-,286	-,059
2000	-,539	-,108
2001	,995	,197
2002	,623	,120
2003	-,018	-,004
2004	-,045	-,009
2005	-,030	-,006
2006	-,049	-,010
Industry new/old	,098	,125
P/E	2,67E-005	,182
Market cap	4,30E-013	,041

Table 12: Regression results on the 3 years return

The following independent variables do not influence return year 1996, 1997, 1998, 1999, 2003, 2004, 2005, 2006 and market capitalisation. In these times return was smaller then 25%. In longer run the size of the company do not matter, because market value changes over time. If you take into account that from IPO the company will growth and you take long time horizon then under pricing is independent on market capitalisation. The year 1991, 1992 and 1995 have significant influence on the 3 years return. The new vs. old industry is a significant factor by the long term under pricing.

The Warsaw stock exchange is the biggest in the Middle Europe. Until 2006 there were 234 new listings. During the first period of stock exchange existence the main source of IPO was privatisation process. Later due to political reasons the privatisation was stopped and many private companies issued their shares. The best time for stock exchange in terms of IPO were following years: 1998, 1999 2004 and 2005. The underpricing in the short run on this stock exchange is very moderate; only 30%, but on the other hand the long term is very big; 89%. The stock prices are very volatile, which means that there are many shares that were under- and overpriced. When you look on IPO on yearly basis you can observe that until 1998 short term underpricing was very moderate with some exceptions; e.g. in 1994 shares were actually 10% overpriced. The mid term underpricing (6 months after IPO) varies from moderate to heavy. In 1993 stocks were 1400% underpriced which is very high and unusual. The reason for such behaviour is

following. In 1993 there were only 2 new listings and companies were unknown and required heavy investment. That is why there is so heavy underpricing. The long term underpricing (9 months and 3 years after IPO) shows with some exceptions very high values. The internet bubble and afterward world wide recession was present on this financial market too. You can observe that in those years all new IPO were overpriced and the number of new ones drop significant compared to previous years. What is very unusual for this market is that investors do not receive “money on the table”. The average amount is 36 zloty (9€), which is almost nothing. To traditional methodology used in such studies I add comparison between growth vs. value stocks, small vs. big caps and old vs. new industry. You can observe that new industry in the short run is little overpriced. In the middle time horizon the stocks are moderate underpriced. The underpricing in the long term has similar value as in the middle time horizon. The situation in old industry looks a bit different. Short term and middle term underpricing is almost the same. However in the long term the underpricing sharply rises. It reaches 104%. The comparison between small and big caps shows following result. In the short run the big companies are slightly more underpriced then smaller enterprises. In the middle run both size categories have the same underpricing effect. In the long run small companies tend to be more underpriced then the big ones. The evaluation growth vs. value stocks shows following findings. The growth stocks are more underpriced than value stocks. In order to find factors that influence underpricing effect, I made regression analysis. The dependent variables were returns after 3, 6 , 9 months and 3 years. The independent variables were: market capitalisation, P/E ratio, dummy variable new or old industry and the year of issue. The short term underpricing is affected by all factors, but market capitalisation, P/E ratio, new or old industry has minimal influence. The regression on 3 year's return shows, that the market capitalisation does not influence underpricing.

6.3.1. The unusual year 1993

Since this year in my sample is very extraordinary I would like to make a more deep analysis. In 1993 there were only 2 companies that entered into the stock exchange. Vistula is cloth producer and Mostostal Warszawa is a construction company. The initial offering price was 2,80 zloty (0,7 Euro). The first day price jumped to 20,70 zloty. You can see that this company was extremely under priced and return after 3 and 6 months can be explained by illiquidity, because this company was illiquid until 2002. Mostostal's shares were offered for 7,15. The first day price was 9,60. This company had also very long period of illiquidity, but its share were heavily under priced. The possible reason for such heavy under pricing could be that these companies were unknown to financial investors. Other possibility is that earlier it was state own company and it required investments. This could naturally reduce their value. You have to take into consideration that this young financial market was seen as risky and unknown to fund managers and institutional investors.

7. Results analysis

Country	Underpricing effect in different time horizon			
	3 months	6 months	9 months	3 years
Poland	0,2195	0,2934	0,2972	0,8908
Hungary	0,0204	0,1412	0,2686	0,4426
Czech Republic	0,0454	-0,0108	0,0595	0,1272

Table 13: Summary of underpricing effect

There are very few studies about underpricing effect in Middle Europe. Lyn and Zacharowicz (2003) investigate the undervaluation effect on the stock exchange in Poland and Hungary. They report weak short term underpricing and moderate long term underpricing in Hungary. In Poland short and long term underpricing is high. Jelic and Briston (2003) report bigger short term undervaluation and negative long term undervaluation in Poland. De la Rosa and Crawford (2004) find out, that the underpricing on Warsaw stock exchange was very low in early 90's. The international research concentrates more on West Europe and USA. The reason why these regions are more popular is connected with the data availability. In Huang and Levich (2003) you can find a table with the comparison of IPO.

Country	Region	Mean of early IPO	Mean of later IPO
Western Europe	Austria	3,6%	11,6%
	France	10,9%	8,1%
	Germany	4,0%	9,6%
	Turkey	6,5%	8,0%
	UK	17,0%	18,4%
North America	Canada	6,4%	3,2%
Austral Asia	Australia	11,3%	10,5%
Asia	Malaysia	65,4%	81,9%
	Philippines	27,3%	80,4%
	Singapore	44,0%	42,0%
	Thailand	6,0%	35,2%
Latin America	Argentina	12,2%	3,8%
East Europe	Hungary	9,7%	35,4%
	Poland	210,0%	54,0%

Table 14: Underpricing around the world

The data was gathered between 1990 and 1995. Means are only calculated if in the country was more than 4 IPO. The mean of early IPO is defined as mean of all returns from 1990-1992. In the same way is mean of later IPO calculated, but the input data is from 1993-1995. Both means allow observing how underpricing effect changed over time. You can observe that in Europe undervaluation is low. The only exception is UK where the underpricing is moderate. Analysing this table you can come to the conclusion that underpricing is on the emerging market higher then on the mature markets. The only exception is US. According to Ritter and Welch (2002) underpricing on this market was high in period 1990-1995. They report 20,8 % under valuation after 3 years

7.1. Underpricing in Czech Republic

The short term underpricing effect, measured from 1995 till 2005, is weak. Its value after 3 months is 4,5% and after 6 months it is -1%. If you look at table 15 that show the short term underpricing effect measured on a yearly basis, you can observe that there are some years in which this effect occurs and in which it is bigger than the average. Widening the observation period from 3 to 6 months causes that the undervaluation or overvaluation effect increases. Traditional theories used in the literature might not be applicable here, because they concentrate more on explaining why you can observe an underpricing effect. However, if this anomaly is not present for Czech firms you have to look for other reasons not mentioned in these theories.

The privatisation method, used by the Czech government, certainly influenced undervaluation effect. In 1995 there were only 14 initial public offerings. This number is not very large. However, you must take into consideration that initial public offering was not only privatisation option used by the government. According to Hanousek and Kocenda (2003) the majority of companies join the voucher plan. That is why the number of enterprises doing the initial public offering is not bigger during following years. The voucher plan was divided into two waves. The first wave was implemented in 1992 and second one in 1995. In each of them citizens received vouchers, which they could exchange for shares of state-owned companies. In the voucher decided to participate around 1000 state-owned companies. Both waves were completed until 1996. According to Hanousek and Kocenda (2003) this program attracted much attention of individual investors. Jelic and Briston (2003) compare the privatisation methods and companies' performance in CEE countries. They show that Czech companies are underperforming compare to Hungarian and Polish companies. According to the authors the voucher schemes caused that you can observe the privatisation of cash flow claims instead of the privatisation of control rights. A different approach to my argument about the influence of privatisation method on the underpricing in Czech Republic can be found in Aslund (2002). He writes that the speed of privatisation affects companies' performance. Quick process prohibits managers from buying the most profitable companies at bargain prices. The drawback of this method is that enterprises are not well prepared and many of them go bankrupt after the IPO. The Czech government decided to initiate a speed privatisation and the overall quality of companies was low. Jelic and Briston (2003) write that in 1997 the government delisted 1300 companies, because their liquidity and discipline was poor and the enterprises did not follow transparency rules. The authors claim, that an IPO is not the cure for poor companies and without proper restructuring and solid corporate governance their quality will not improve by itself when they are listed on a stock exchange. Hanousek and Kocenda (2003) conclude that the quality of listed companies improved after 1995 and this fact can be connected with the positive development of corporate governance.

The time-series regression made on the 3 and 6 month results (dependent variables) shows that independent factors such as P/E ratio, market capitalisation, industry and liquidity influence the underpricing effect, but their influence power is minimal.

The privatisation method certainly influenced undervaluation effect, however still is interesting why you can observe undervaluation in particular years. In table 15 you can observe that the underpricing is positive in 1995, 2002, 2004 and 2005. From 2004 you can observe positive underpricing. However it is worth to mention that in 2004 only 1 company issued its share. This enterprise was in the pharmaceutical industry and after the “internet bubble” this kind of industry started to be attractive for foreign investor.

The undervaluation in 1995 might be explained by the signalling theory, because investors need positive signal such as high quality or strong signal political impulse in order to catch their interest especially when the financial market is young and unknown. A similar conclusion, which supports my argument about the underpricing in 1995, can be found in Laurin and Vining (2004) and Perroti (1995). According to Perroti the privatisation process can be seen as the government’s sign for investors that it is ready to share political risk with them. He claims that this willingness is combined with underpricing in order to build up the investor’s confidence. The overvaluation in 1996 and 1997 may be influenced by the Russian crisis, because generally investors avoid such markets and withdraw their money. Kaser (2002) reports that the financial market in Czech Republic was heavily influence by that crisis. Ivo and Welch (2002) observe similar pattern on the US stock exchange after dot-com bubble crash. Newly listed companies were also overpriced.

	1995	1996	1997	2002	2004	2005
3 Months	11,02%	-9,64%	-0,50%	2,66%	16,15%	3,70%
6 Months	15,15%	-25,51%	-25,01%	7,16%	56,94%	14,47%

Table 15: Short term underpricing on yearly basis in Czech Republic

Long term underpricing on this market is weak. Its value is around 6%, but when you double the time after IPO the effect doubles. This effect measured on the yearly basis shows that this effect is stronger in certain years.

The choice of privatisation method, made by the Czech government, might also influence the undervaluation effect in the long run, because more state-owned companies decided to join the voucher program rather than be privatised through stock exchange. Biais and Perotti (1997) investigate if there is a positive correlation between income inequality and strong underpricing. Pohl et al. (1998) report that the population not only in the Czech Republic, but also in other Central European countries had low levels of private savings. Therefore, people could not afford to buy shares of newly privatised companies. He suggests that this fact has to be taken into consideration by planning privatisation, because the participation of individual investors is essential for the financial market development. The voucher program in Czech Republic was chosen, because there was large income inequity and the average citizens were too poor to buy shares of newly privatised companies. The authors find support for their theory.

They observe that conservative governments decide to rather choose public sales than private ones and to allocate more shares to small investors. Decision makers deliberately abandon the revenue maximalization principle. In the long run such decisions cause that the ownership is more dispersed and it is harder and more costly for investors to acquire a controlling majority. Most of the vouchers were gathered by banks and special funds, because they offered trust services for the Czech citizens- the owners of these security papers. In the literature Czech financial market structure is categorized as being very similar to German, because banks and funds play a major role in the decision process. The authors stress also possible ethical problems connected with the insider knowledge and shareholdings concentration.

When you look at the table 16, you can observe not only that the underpricing in the long run is stronger but also in certain is not consistent; for example: In 1996 and 1997 after 9 months from the issue you can observe overvaluation. In 3 year period you see opposite results. Only in 1995 you can observe consistent results in both observation periods; however the underpricing effect becomes smaller in the second one.

My findings are not unusual and the similar results are also reported in the literature, however the scholars' opinion about why this effect is not consistent differs. Ritter (1991) claims that risk mismanagement, bad luck, fads and overoptimism are responsible for underperformance. A different opinion about such specific underpricing is presented by Lyn and Zychowicz (2002). They think that this effect is driven by investors' demand. High demand causes that shares prices rise ,but it does not stay constant over time. Therefore, you can observe the price fluctuation. A different argument you can find also in Rajan and Servaes (1995). The authors claim that the willingness to do IPOs is bigger when firms with the comparable multiples enter the financial market, but later the performance gets disappointing.

	1995	1996	1997	2002	2004	2005
9 Months	26,41%	-4,68%	-29,07%	23,57%	72,18%	31,66%
3 Years	13,42%	3,88%	6,93%	166,87%	0,00%	0,00%

Table 16: Long term underpricing on yearly basis in Czech Republic

The time-series regression made on the 9 month and 3 years results (depended variables) shows that independent factors such as P/E ratio, market capitalisation, industry are not influence the underpricing effect, but their influence power is minimal. The only independent factor: liquidity is insignificant.

You might draw the following conclusion. Strategic investors' commitment toward a particular corporation is usually long term oriented. The selling process is not performed trough a stock exchange in the most cases, but through a direct search of potential buyers. You might also connect a long term underpricing with an investor's willingness to invest in this particular company. According to Anderson et al (1997) the Czech financial market was not open for foreign investors except for the telecommunication and banking sector. For this reason the long term underpricing is so minimal, because there were few companies in which investors could buy controlling shareholding. Bornstein (1999) writes

that the Czech government kept minority shareholdings in many industries and was active as indirect investor in other firms. According to Anderson et al (1997) foreign investors look for companies in which they can obtain major shareholding and have full control over the day to day operations. The authors suggest that this can be explained by lower agency costs and lower political risks.

7.2. Underpricing in Hungary

The stock exchange in Hungary has a similar market capitalisation as the one in Czech Republic. 70% of free float was made by foreign investors in 1999. The Hungarian government chose a different privatisation method and more enterprises were privatised through the stock exchange. The average underpricing effect after 3 months is very weak (only 2%), but increasing the observation period it rises to 14%. Increasing the observation period do not cause that the underpricing effect doubles. The undervaluation effect measured on yearly basis shows that there are some years when this effect is occurs and its very strong. However you can observe the opposite results.

The Hungarian government implemented different privatisation method – the privatisation through stock exchange. The Hungarian privatisation program faced problem connected with small amount of state-owned companies This issue might have influenced the short term underpricing effect, because the whole privatisation policy had to be adapted to small number of state-owned companies.

My point of view is shared by the scholars who investigate the Hungarian financial market. According to Fletcher (1995) atmosphere among certain Hungarian policymakers was mixed, because they were concerned about the small number of state-owned companies that could be listed on the Budapest Stock Exchange. Despite this concern selected companies were privatized. Nevertheless Koke and Schröder (2003) claims that the Budapest market is more private sectors oriented rather then privatization oriented compared to the other stock exchanges in this region. Lyn and Zychowicz (2002) come up with different argument considering the underpricing effect on the Hungarian stock exchange. In the author's opinion "Less underpricing may have been needed in Hungary to move the relatively lower number of public offerings"² They conclude that the relatively bigger Polish financial market may also influence the undervaluation effect.

The time-series regression made on the 3 and 6 month results (depended variables) shows that independent factors such as P/E ratio, market capitalisation, industry and liquidity influence the underpricing effect, but their influence power is minimal.

This might mean that investor's judgment about IPO attractiveness depends on the market attitude. In the literature you can find some general factors that have impact on the underpricing effect; e.g. overoptimisms, fads, luck. On the other hand Aggarwal and Rivoli (1990) suggest that the young Hungarian financial market may be easily influenced by "fads". It is worth to stress how this market

² Lyn and Zychowicz (2002): „The performance of new equity offerings in Hungary and Poland“

evaluated from no institutional mechanism for underpricing, where something like “fads” or “hot market” does not exist, to usage of bookbuilding allocation system. Lyn and Zychowicz (2002) use offering price as a proxy for company’s quality. They find out that the asymmetric theories can not be applicable on this market. According to the authors the underpricing on this stock exchange is shaped by a momentum prior to the equity offering. They conclude that investor’s interest may be periodic and depends if the market is seen as “hot”. Loughran and Ritter (2002) observed that the performance of the market in US before initial offering is correlated with the underpricing magnitude.

On the table 17 you can observe short term underpricing on yearly basis. Generally you can see that increasing the observation causes that this effect doubles. In 1995 you can see low undervaluation after 3 months, but this value increases 9 times after 6 months. In 1996 the underpricing effect is bigger then in 1995, but one year later it becomes smaller. The Russian default and “internet bubble” is also visible in my sample from 1998-01. Similar result you can find in Jelic and Briston (1999).

	1995	1996	1997	1998	1999	2000	2001	2003	2004	2005
3 Months	4,93%	44,21%	18,17%	-19,33%	-7,05%	-34,75%	-62,25%	10,12%	-1,44%	10,71%
6 Months	36,32%	63,96%	32,36%	-26,73%	-26,66%	-40,10%	-87,13%	82,42%	0,24%	13,93%

Table 17: Short term underpricing on yearly basis in Hungary

High short term underpricing and overpricing is characteristic for emerging markets. On the table 13 you can observe that this effect on such markets is very strong, e.g. Malaysia, Thailand. Generally emerging markets are seen by investors as risky therefore they require higher compensation for participation. Therefore governments have to underprise in order to attract the investors. Dewenter and Malatesta (1997) apply this risk return relation to privatisation environment. They claim that the uncertainty about the intrinsic value of privatised companies is connected with unknown regulation policy, small number of security analyst and comparable publicly traded companies.

Long term underpricing on this financial market is strong as well as after 9 months and 3 years. Increasing the observation period 2 times cause that this effect doubles too.

High underpricing in the long run might be connected with the poor valuation, because the data about past earnings was not reliable. This information do not reflected the true situation and they were too optimistic According to Jelic and Briston (1999) the problems connected with valuation are common for transition economies. The authors conclude that this kind of uncertainty creates asymmetry between parties involved in IPO process and therefore you can observe high undervaluation effect in the long run. Teoh, Welch, and Wong (1998) claim that too „optimistic“ accounting before IPO is responsible for poor performance after IPO. It is obvious that enterprise present their past financial results in the best possible way. Therefore for investors it is difficult to find hidden financial problems, which may affect the company valuation. The authors think that negative performance partly is caused by the market, because it is too optimistic about the future earnings and it is not able to compare this expectation with the reality. In the case of the Hungarian financial market problems with accounting are well known, because the accounting system used in corporations had to be reformed and adapted to the EU standards.

Table 18 shows mix underpricing results from 1996 until 1998. In 1996 and 1997 you can see positive underpricing after 9 months, but this effect disappears after 3 years. In 1998 the results are opposite. “Internet bubble” is also present in this sample from 1999 until 2001.

	1995	1996	1997	1998	1999	2000	2001	2003	2004	2005
9 Months	69,50%	78,06%	20,45%	-27,21%	-15,45%	-51,54%	-82,00%	106,67%	10,58%	3,57%
3 Years	136,00%	-0,51%	-21,33%	36,75%	-57,88%	-34,75%	-68,75%	0,00%	0,00%	0,00%

Table 18: Long term underpricing on yearly basis in Hungary

There might not be single factors such as poor accounting standards, external crises or market characteristics responsible for such mix results. Scholars have different opinion why you can observe such mixed results.

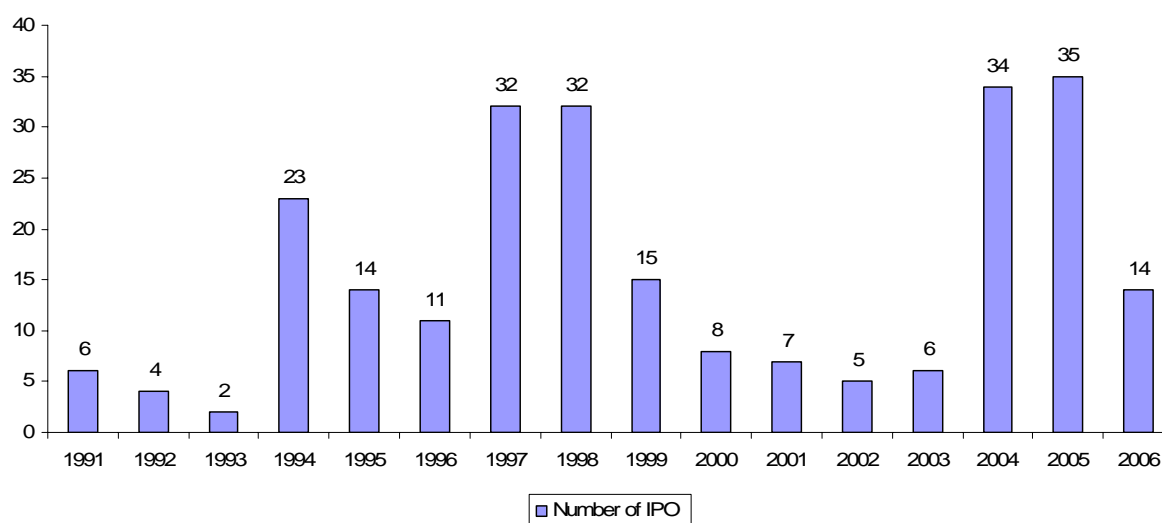
Scholars have observed world wide that the long term underpricing is negative (see: e.g. Ritter (1991)). There a various theories that tries to explain this phenomenon. According to Miller (1977) different investors have different expectation toward the company’s value. The most optimistic investors buy IPO. Over the time the opinion’s difference decrease and converge toward the mean valuation, therefore the price falls. This explanation according to Ritter and Welch (2002) is applicable to a market where the float is small and there are not many investors. The other explanation was proposed by Schultz (2001). He claims that one successful IPO follow more. Jain and Kini (1994) claim that the poor accounting performance is responsible for a negative underpricing. According to Lyn and Zychowicz (2002) that negative underpricing is not caused by low quantity and quality of the available accounting information. Another explanation for overvaluation can be connected with external crises. According to Kaser (2002) only Czech Republic and Hungary were influenced by Russian crisis. It caused that many investors left this market and decided to invest somewhere else. The poor financial and macro fundamentals were responsible in this country for economical problems. In 1998 year Russian government announced that it is unable to repay their debt. The main reason was the lack of economical and budget reforms. In the same time the main source of foreign currency oil and gas sales soured, because the world prices sharply declined. It is worth to mention that this piece of revenue was one of the most important ones for the Russian budget and the lack of income from this position created a huge deficit that could not be balanced by credits. The only way for the government was to announce default and hope for the debt restructuring and help from International Monetary Fund and World Bank. If investors behave like the information cascade theory predicts, then the negative information and attitude toward East Europe region quickly spread among financial market participants. As the result the whole market is seen as more risky as usual and it is avoided by the investors. That is why all IPO are overpriced, because the judgment about the markets in this region was negative.

The time-series regression analysis made on 9 months as depended variable shows following results. In the 9 months case the share’s liquidity as one of depended factors is not significant and it does not influence the underpricing effect. When an investor enters initial public offering and his commitment is long term oriented, then he does not take into account the share’s liquidity, because he will be always

able to sell his stake either through a stock exchange or a direct sale. Of course the speed of transaction depends on the asked price. The time-series regression on 3 years returns as depended variable shows that new/old industry independent variable has a significant influence on the underpricing. It would mean that investors pay attention in which industry the company is operating. The enterprises in new industry require high investment and they are not paying any dividends. Their value is combined with the technology edge against the competition. The investors are aware of that and therefore this investment is seen as more risky, because products uncertainty; for example: if a new treatment made by a biotechnological company will be effective or if medicine will be approved by the drug authority. That is why the investor may require more profit for the taken risk.

7.3. Underpricing in Poland

This is the biggest stock exchange in this region and the privatisation process began here already in 1991. In the late 1990 regulation of security trading and Law on Privatisation were passed. This act was a compromise between various political parties. In 1991 begins practically implementation of the transformation process. Most of former state-owned companies were transformed into stock corporations. The following graph shows number of IPO on yearly basis from 1991 to mid 2006.



Graph 6: The number of IPO on yearly basis

Until 1993 you can observe that the number of IPO decreases. In 1994 increases rapidly and during the next 2 years falls again to 11 IPOs. The biggest number of IPO before dot-com bubble is in 1997 and 1998. One year later the number decreases to 15 IPOs. The “internet bubble” influenced this market too, because the number of IPO decreased rapidly. After 2004 you can observe that this stock exchange recovered very quickly.

The privatisation process started earlier as in Hungary and Czech Republic. Therefore this market might be seen by investors as risky. According to Cutler (1996) the Polish government had to introduce underpricing strategies in order to overcome this negative factor. The fluctuation of the number of IPO is

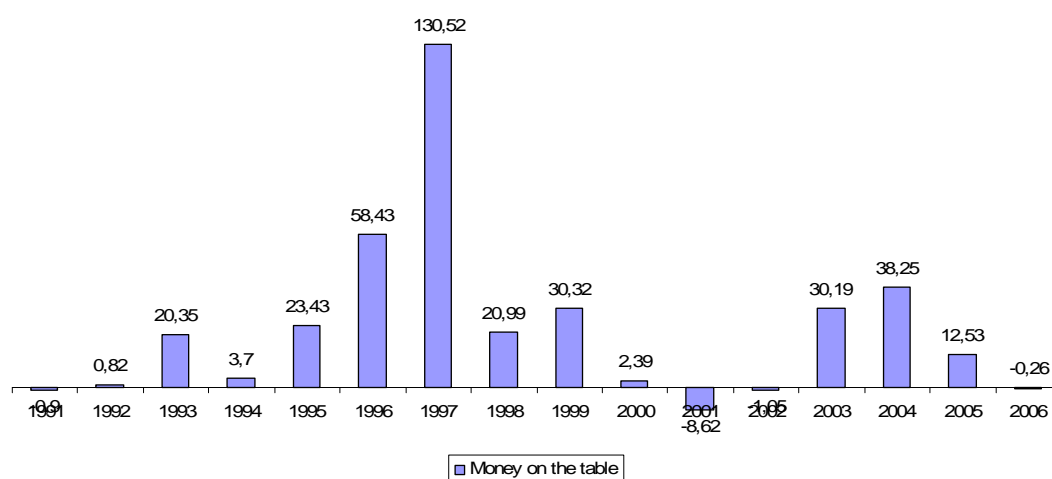
influenced by political changes in the country until 1997. Later its effect is minimal. The reason for falling number of IPO between 1991 and 1993 was the government's decision to stop the privatisation process. The other explanation of decreasing IPO companies can be found in Perotti (1995). In the author's opinion the privatisation process is a sign of a government's obligation toward privatisation program and a willingness to share political risks with investors after privatisation. Privatisation and underpricing model are strategies used by a government to gain investor's confidence in a stable policy towards privatised companies. The success of this strategy is measured by increased revenues. On the other hand the populist government prefer quick sell and later through law and regulation changing earn extra revenues from private shareholders. However such behaviour creates uncertainty on the financial market and causes that the number of IPO decreases and foreign investors avoid such market. The election and the change of the ruling party for more left wing oriented in 1994 caused that the whole privatisation was stopped. After 1997 you can observe more favour climate toward the transformation of the corporations from state-owned into stock corporation, because there were some personal shifts in the left wing oriented government.³ Later the ruling party lost the elections and liberal coalition of central-right party became the ruling party. They speed up the privatisation process partly for political reasons. On the other hand the start-up companies started to list themselves on the stock exchange and later the number of private companies was bigger than the state-owned. (Lyn and Zychowicz (2003)). You can observe that "internet bubble" and world recession affect this market too, because the number of IPO decreased rapidly. After the recession you can see a sharp increase in the number of new IPO. The possible reason for such shift was not only more favourable investment climate, but also the postponed decision for going public. As the theory of going public says, entrepreneurs compare the value of their company with the similar business listed on the stock exchange. Since the owners of companies want their value maximized, they pay attention how the enterprises are valued by the market. In the recession time the new listed companies were undervaluated, because investors were not interested in shares. The entrepreneurs might hold their decision, because they could not get maximal price for their company. The other argument for waiting until the recession is over was the good financial condition and the company could afford to wait for better time. The few who could not wait took a risk and decided to make an initial public offering. The new wave of IPO was partially stimulated by enterprises from the new industry.

Within 15 years of the market existence it transformed itself into the largest in Middle Europe. How attractive this market became for some investors show the names of companies that it attracted, for example: Hungarian MOL is listed parallel in Hungary and Poland; Austrian Bank: Bank Austria-Credit Anstalt. The reason for this success is connected with the ability to stop to rely only on the privatisation process and start to attract private investors. Nivat (1997) describes how the polish stock exchange developed from 1990-94. According to the authors the further development of this financial market could take place, because there was regular entry of new companies. Some of them were famous and therefore

³ for further details about the period 1994-96 and after 1997 see Blaszczyk (1999)

were very attractive for investors. According to the author after March 1993 bullish tendency on the market attracted new investors and prices and trading volume increased. He underlines that managers and employees benefited from discounted shares, which this group received during the privatisation process. According to Blaszczyk (1999) the high accounting standards and disclosure rules are also important factors that made this market more transparent for investors. For this market it is a big success, because other stock exchanges did not achieve such development and got marginalized on the financial market. According to Parquel (1998) the Warsaw Stock Exchange is one of the most effective stock exchange markets in East Europe.

According to the theory leaving money on the table is a sign for good quality and only rich companies can afford to perform such action. This is also a mechanism to discourage poor quality companies from entering the market. The following graph shows how much money was left on the table on the Warsaw stock exchange. All values are in polish zloty.



Graph 7: Money left on the table

As you can observe the amount of money differs and it is pretty irregular. The period 1991-1992 is characterized by no money left on the table. The choice to go public was made by the government in this period. That is why there is no money on the table. In 1993 you can see a sharp rise of the amount left on the table. It may seem that this amount is not so high, but when you compare this figure with the average offering price (0.47 zloty), you will come to the conclusion that it is 50 times bigger than the average offering price. However if you look on the previous graph you will notice that in 1993 there were only 2 IPO. One year later you can not observe any money on the table. Period 1995-1997 is characterized by increasing amount money left on the table. The average initial offering price was 18.11 zloty in 1995. The amount of money left on the table is very small compared to 1993. The average initial price was 12 zloty in 1996 and the amount of money left on the table was 58 zloty. This is almost 5 times the initial price. In 1997 the amount left on the table was the biggest. The average offering price was 21 zloty.

Generally you can say that until 1997 both the privatisation process and creation of the stock exchange were completed. You can observe that high IPO level is connected with high amounts of money left on the table. The year 1997 is characterized that not only the rest of state-owned enterprises was

privatized, but the private enterprises entered the stock exchange too. On the graph you can easily observe the influence of “internet bubble” and world recession on the first day returns. The results are negative. However these results are different from reported by Ritter and Welch (2002) on the US stock exchange, because they observed high amount of money left on the table. The post recession period is characterized by a moderate amount of money left on the table. Leaving money on the table is a world wide phenomenon and it is well founded in the literature. Generally this subject is always connected with short term underpricing. According to Lowry and Schwert (2002) high first day returns (money left on the table) lead to high IPO activity during next 6 months. Welch and Ritter (2002) think that high IPO activity may encourage more companies to make their initial public offering, because companies’ public valuation is higher then expected. Of course if the IPO activity is low the underwriter may discourage enterprises to go into public. The authors report also that during the “internet bubble” \$ 66 milliards was left on the table on the US stock exchange. The different opinion about this topic you can find in Habib and Ljungqvist (2001). They claim that extra dollar left on the table allows reducing marketing expenditures by a dollar. However this theory does not explain why internet companies during the “internet bubble” left so much money on the table, because there was such a big demand for such shares that these shares could be placed on the stock exchange with smaller expenditures.

Scholars that research this effect on the financial markets in Poland, Hungary and Czech Republic come up with similar conclusions. Lyn and Zychowicz (2003) observe moderate in Hungary and high first day returns in Poland. Their results are similar to Welch and Ritter (2002) theory and Loughran and Ritter (2002) empirical’s research about the correlation between the levels of IPO activity and amount the money left on the table.

The short term underpricing is moderate. Its value after 3 months is 21% and after 6 months is 29%. However if you look on the underpricing on the yearly basis you can observe that this financial markets have their own characteristics.

The table 19 presents underpricing on the yearly basis. In 1991 the undervaluation is very small. In 1993 it rises sharply and one year later is negative. The period 1995-1997 is characterized by high underpricing.

	1991	1993	1994	1995	1996	1997
3 Months	1,63%	635,00%	-10,59%	68,01%	98,68%	40,70%
6 Months	-1,79%	1341,98%	-1,11%	120,54%	129,70%	24,85%

Table 19: Short term underpricing on yearly basis in Poland

It is worth to mention that investment banks faced some problems with the valuation of enterprises and that’s why they chose to evaluate their value in more conservative way. This is might be a reason for the low underpricing effect in 1991. The difficulties with the valuation, that Culter and Paszowska (1996) report, are connected with the tool that it is used by investment banks. The problem with usage multiple comparisons lay in the main assumption behind this decision tool. The multiple analyse is used to estimate the company’s value. Knowing the enterprise value you can set the offering price. The only risk

is the investor's judgment if this price is fair for such companies. The compared companies are never identical, because they have a different product strategy, a different financial structure and different human capital. Similar conclusion you can find in Ritter and Welch (2002). It is worth to mention, that investment banks had problems with the available data, because it was very often unreliable (see Cutler and Paszowska 1996); for example: The sales data before 1991 show high market share, but there was any competition during the communisms era. Therefore it was hard to judge true market share. The same situation was with the financial data. That is why the investors might get the wrong impression about the past performance and therefore there is a lack of the underpricing effect. The 4 year period seems long enough to generate reliable data, but you must take into consideration, that the creation of a new accountancy system and new product policy takes some time and the implementation depends on the management team. According to Brau and Fawcett (2006) reliable data about past performance is important factor for investors and it gives positive signal for financial market.

In 1991 there were also some problems concerning the information distribution between investors and investment banks. Hence investors did not know whether the enterprises were good or not. The beginning of this financial market existence was very difficult, because this country was transferring its economical system from planned economy to free capital markets. Culter and Paszowska (1996) come to the conclusion that the government's intention was to use underpricing effect at the beginning. They find out that there were some problems with the valuation of first companies and the price adjustment had to take place in order to find a true value. The authors observe also "money illusion effect" On the polish financial market appeared some local practices that tried to mask underpricing and pessimistic views. There were special discounts for the IPO buyers available. Some of investor did not pay for shares in the currency. The authors think that these practices may have reduced the benefits from the underpricing strategy. According to Biais and Perotti (1997) an optimal privatisation strategy requires the optimal level of underpricing and taking into consideration the political value of shares. The authors prove that the government in countries with unequal income tend to underprice more and allocate shares to median voters (average citizen).

In 1993 is unusual due to two companies which were extremely underpriced. In my opinion the "quality theory" might not explain this abnormal result, because these corporations' quality was poor and the pressure from the government was high to privatise them quickly. Both companies can be classified as light industry and as you already know these corporations were extremely underinvested. Therefore their value was low. As the result their price was set low in order to attract foreign investors. Nivat (1997) reports similar high undervaluation result in 1993 and he confirms my conclusion that the price was used to attract investors.

The high underpricing in the period 1995 – 1997 might be connected with "hot" market period on the stock exchange. Jelic and Briston (2003) claim that high undervaluation is created not only to test the privatisation program but also to attract investors for the share subscriptions. The authors think that the

polish government may try to time the issues in order to create a large number of IPO. This would lead according to Ritter (1991) theory to market timing and “hot” periods. Rouwenhorst (1998a) finds that on 12 European stock markets you can observe “hot” and “cold” periods. Haugen and Baker (1996) show that the book building does not mean automatically that you can observe market timing on stock exchange. Rouwenhorst (1999) find that momentum, firm size and value can predict the shares value. Derrien (2005) claims that investors’ behaviour depends on the market conditions. Actually you can observe hot periods on the polish market too. Lyn and Zychowicz (2003) find the support for this market timing theory on the polish stock exchange.

It is worth to mention that from 1997 the share of transformed state-owned companies declines and the number of private companies listed on the Warsaw stock exchange rises. From the table 18 you could see that the underpricing is present in both 3 and 6 months cases. In 1998 you can observe moderate undervaluation after 3 months, but this value turns negative after 6 months. The period 2000-2002 is characterized by moderate overpricing. However you can observe that in 2002 after 6 months there is a valuation correction. In 2003 you can observe that the underpricing effect appears again. Period 2004-2006 is characterized by little underpricing. This period of time is also characterized by a large number of IPO in the post bubble time.

The IPOs’ value after 1997 is smaller than before 1997. The composition of IPO changed with the time. The number of state-owned companies declined, but the number of private companies increased that decided to issue their shares. Denwenter and Malatesta (1997) report that government officials in UK underprice more than owners of private company. However, research made by Prasad, Vozikis and Ariff (2006) in Malaysia, show opposite situation. Aussenegg (2000) describes this effect in Poland. He shows that from 1994 the number of IPO of private companies increases more rapidly then the number of state-owned enterprises. Derrien (2005) claims that the investor’s behaviour is correlated with market conditions. The better the conditions are the greater the demand is. However the amount might not reflect the quality before the internet bubble. Therefore you can observe only a small underpricing effect. Perotti (1995) analyse following hypothesis. At the beginning of the privatisation process there is a high political uncertainty. In order to convince investors and to signal commitment toward market-oriented reforms, the government has to use underpricing strategy. It can be expected that over time the uncertainty will decrease, because the market reputation is build-up. Therefore you can observe high underpricing at the beginning of the privatisation program. Later you can expect that this effect is smaller. Aussenegg (2000) investigates this hypothesis. He observes that the underpricing is higher for earlier privatisation than for later privatisation. The author claims that at the beginning several companies were more than 100% underpriced.

	1998	1999	2000	2001	2002	2003	2004	2005	2006
3 Months	25,73%	2,71%	-28,36%	-30,16%	-35,10%	26,79%	1,65%	4,39%	3,60%
6 Months	-4,23%	-0,26%	-32,28%	-30,61%	4,54%	35,26%	2,03%	17,41%	0,00%

Table 20: Short term underpricing on yearly basis in Poland

The long term underpricing is high, especially 3 years after IPO. Its value after 9 months is 29% and after 3 years rises to 89%.

The “impresario hypothesis” might explain high undervaluation of corporations. The investment banks might have to reduce the offering price on this market in order to attract investors to an unknown market. In Jelic and Briston (2003) you can find explanation why this effect is so strong. The authors claim that the high level of insider ownership, the high liquidity and the transparent stock exchange cause that companies’ value increased during 3 years. These high standards decrease political risks and allows attracting international investors; e.g. investment funds. The authors stress also important role of polish government in supporting the privatisation program. It gives up the big majority of state-owned companies and decides not to retain any special veto rights (golden share). Jelic and Briston (1993) mention that foreign investors played a major role in the privatisation process in Poland, because they participated in one third of all privatisation and held a significant proportion of shares.

Like in the previous countries I made also the time-series regression on the underpricing effect in short term underpricing in order to see what factors influence it. The following independent factors try to explain this effect: P/E ratio, market capitalisation, new/old industry and year. The results on the 3 months underpricing as dependent variable shows that some years P/E ratio, market capitalisation and new/old industry do not influence this effect, because they are insignificant. It means that in this time the I used the same explanatory variables on the 6 months returns. The number of years that do not influence the underpricing effect increased. P/E ratio, market capitalisation and new/old industry have minimal influence on the underpricing.

From these two results you can come to following conclusion. Since the particular years have bigger influence than ratio, size and kind of industry then the investors follows signals from the market rather than own analysis. This regression might confirm market timing theory. If you create enough interest, then demand for shares might exceed supply. However if the investment bank is not able to create such condition, then you might observe overpricing.

From 1992-1996 you can observe high underpricing, but in 1991 and 1997 you see that the results are mixed. In 2001 you can observe that after 9 months the companies were overpriced, what is typical for this period of time. However if you look on the 3 years return, you will see that it is positive. In the period 2002-2004 you can observe the same mixed results like in 1996-1998. The dot-com bubble is also visible in my sample in the year 2000.

	1991	1992	1993	1994	1995	1996	1997
9 Months	-13,83%	0,00%	1341,98%	-9,50%	118,06%	149,71%	16,89%
3 Years	1237,57%	2407,93%	178,50%	97,63%	128,65%	26,48%	-10,11%

	1998	1999	2000	2001	2002	2003	2004	2005
9 Months	-10,03%	13,98%	-52,76%	-24,63%	11,27%	24,03%	-0,49%	33,89%
3 Years	-6,90%	-25,31%	-47,46%	105,44%	68,16%	0,00%	0,00%	0,00%

Table 21: Long term underpricing on yearly basis in Poland

In my opinion this result might be explained by the market development. It means that investors might be easily impressed by the offering price and corporations base their IPO decision on the market behaviour. Megginson and Netler (2000) observed in 33 countries positive long term underpricing. According to Ritter (1991) investors are episodically overconfident about enterprises and companies use this weakness. Schultz (2003) goes one step further. He claims that more companies are willing to issue shares at higher prices even if they are not able to predict future earnings. The companies make initial public offering at market peak. Therefore their performance is poor afterwards. Schultz (2003) claims that pseudo market timing is responsible for poor performance. The more companies go public when they can receive more money. As the result there are offered more firms at high valuation than at low price. According to Heaton (2001) managers tend to be overoptimistic and spending too much of financial resources. However, not only managers take too optimistic decisions, but also entrepreneurs and investors⁴. According to Ritter and Welch (2002) internet bubble has showed that even if the long term underperformance exists, it is difficult or impossible to exploit it. The authors suspect that many short sellers lost their money on the bubble when they had to close their position before they could realize their profit.

The lack of solid financial data might have caused the valuation problems that investment banks were facing at the beginning. Teoh, Welch, and Wong (1998) claim that too optimistic accounting before issuing shares is responsible for undervaluation, because the market is not able to cross-check this financial data. Under the communistic regime accounting standards differs from market economy. Therefore the polish government had to adopt the accounting rules simultaneously with the privatisation program. Krzywda, Bailey, and Schroeder (1994) examine the disclosure and accounting practices of eight companies that were listed on the stock exchange in 1991. They report that all enterprises provide reliable financial information to investors and conclude that the comparison among the companies may be difficult for polish investors unfamiliar with the western accounting standards. In 1995 there was the next major reform of polish accounting rules. The new law required compliance with IAS and European Union Directives. After 2005 the polish financial reporting has to be prepared according to IAS and International Financial Reporting Standards.⁵

The time-series regression on 9 months results as dependent variable shows that there are some years influencing undervaluation, because they are statistically significant. When you compare these coefficients with the return's table you can observe that in these years the underpricing is the biggest. Independent variables like: P/E ratio, market capitalisation and new/old industry influence the undervaluation in minor way.

⁴ for further details see Bernardo and Welch (2001) and Daniel, Hirshleifer, and Subramanyam (1998)

⁵ for further detail see D. de la Rosa et al. (2004)

The regression result on the 3 years return as dependent variable is a bit different. You can observe that independent factor market capitalisation is not influencing the underpricing effect, because it is statistically significant. The other independent factors like P/E ratio and new/old industry have smaller influence on the underpricing effect.

This might mean that for investors it is not important how big the company is, because the size is variable in the long run. During 3 years since IPO the corporation grows through day to day operation. As you could observe until 1993 there was a huge increase in the value. This means that the companies grow, because the owners invested into the enterprises. This point of view makes sense when you are strategic investor or fund manager. Small investor might of course pay attention to this factor, because the size is a guarantee of dividend. In Lyn and Zychowicz (2003) you can find a similar results.

8. Summary

Under the communistic regime whole economy was controlled by the Central Planning Office. This government agency controlled all resources and assigned production quotas to factories. In the planning economy money was viewed as an accountancy figure without any meaning, because in an equal society you do not need money to satisfy your needs. This was the main role of the government, but you still have to count goods. This seems very strange and unrealistic, but that was the official communistic ideology. Under the communistic dogma, private property was not allowed, because it made the distribution of wealth unequal among the society. All industry and real estate assets in the country belonged to the citizens and in theory there was no need for private property. So under such a system there was no need for stock exchanges or stock corporations. When the communistic regime collapsed the whole economy had to be transformed in order to meet open market standards. One of these standards is privatisation process.

There are 3 possibilities to privatise a company: voucher program, sales to strategic investor or privatisation through stock exchange. In Czech Republic the government chose to privatize mainly through voucher program. Small number of companies decided to be privatising through the stock exchange. The whole privatisation process in Hungary was based on partial privatisation, the foundation of corporation and the exchange of inter-enterprise ownership. Some companies were sold to international investors and the rest part was privatised through stock exchange. In Poland policy makers decided to use all 3 options. This decision was politically motivated, because the ruling parties changed every 4 year and each of new party had different approach to this manner.

On the Prague Stock Exchange the short term underpricing is weak, because its value after 3 months is 4,5% and after 6 months it is -1%. However if you look on the underpricing effect on the yearly basis, you can observe that there are some years when this effect is bigger than the average. Traditional theories used in the literature might not be applicable here, because they concentrate more on explaining why you can observe an underpricing effect.

The privatisation method used by the Czech government might influence this effect. According to Hanousek and Kocenda (2003) the majority of companies join the voucher plan. It started in two waves in 1992 and 1995 and around 1000 companies decided to participate in this program. According to the authors this program attracted much attention of individual investors. The authors claim, that an IPO is not the cure for poor companies and without proper restructuring and solid corporate governance their quality will not improve by itself when they are listed on a stock exchange. Jelic and Briston (2003) claim that the voucher schemes caused that you can observe the privatisation of cash flow claims instead of the privatisation of control rights. This method caused that the average underpricing in Czech Republic is weak.

The chosen privatization option might also influence the financial market structure. The time-series regression on 3 and 6 months results as dependent variable had showed that only liquidity influence the underpricing effect. The other independent factors like P/E ratio, market capitalisation and kind of the industry influence the underpricing effect, however their effect is minimal. This influence can be seen in the development of the under valuation effect on the yearly basis. You can observe that Russian crisis had impact on this financial market. Therefore you can observe overvaluation in 1997 and 1998. The same result report Kaser (2002).

Long term underpricing on this market is minimal. Its value is around 6%, but when you double the time after IPO the effect doubles. When you look on this effect on the yearly basis, you can observe that there are some years when the results are mixed. For example: In 1996 and 1997 you can observe overvaluation after 9 months from the issue. In 3 year period you see opposite results in both cases. This effect could be explained by small demand as a result of the privatisation program. The similar conclusion you can find in Lyn and Zychowicz (2002). Rajan and Servaes (1995) think that, the willingness to make IPO is bigger when the enterprises with the similar multiples enter the financial market, but later their performance gets disappointing. It is worth to mention that the citizens' income was unequal distributed therefore not everyone could allow to buy shares in newly privatized companies. Pohl et al. (1998) report that population not only in Czech Republic but also in other Central European countries had the low level of private savings. That is why the Czech government might have decided to privatise most of the companies through the voucher program.

I made also the time-series regression on 9 months and 3 years results as depended variable with the same independent factors like in the previous one. The results are similar to the previous regression. Only liquidity do not influence the underpricing effect and the independent factors such as P/E ratio, industry and market capitalisation have small influence.

As I previous mentioned the Hungarian government chose a different privatisation strategy. Therefore you might expect different underpricing effect. The stock exchange in Hungary has a similar market capitalisation as the one in Czech Republic. 70% of free float was made by foreign investors in 1999. The average underpricing effect after 3 months is very weak (2%), but increasing the observation

period it becomes more significant. After 6 months the underpricing effect increases to 14%. When you look on the underpricing effect on the yearly basis, you can notice that there are some years with high under valuation and some with negative and there is no clear rising pattern. You can also notice that the Russian default influenced this financial market.

Generally it is typical for emerging markets, that underpricing is high, because the investors require higher compensation for higher risk. Therefore governments have to use the underpricing in order to attract potential investors. Dewenter and Malatesta (1997) apply this risk return relation to privatisation environment. They claim that the uncertainty about the intrinsic value of privatised companies is connected with unknown regulation policy, small number of security analyst and comparable publicly traded companies. According to Jelic and Briston (1999) the problems connected with valuation are common for transition economies. The authors conclude that this kind of uncertainty creates asymmetry between parties involved in IPO process and therefore you can observe under valuation effect. Lyn and Zychowicz (2002) come up with different argument considering the underpricing effect on the Hungarian stock exchange. They claim that low underpricing was necessary, because there was a small amount of companies that could be privatised through the stock exchange.

The time-series regression on 3 and 6 months results as dependent variable has shown the independent factors like P/E ratio, industry, market capitalisation and liquidity do influence the underpricing effect, because their influence is minimal.

This might mean that investor's judgment about IPO attractiveness depends on the market attitude. Aggarwal and Rivoli (1990) suggest that the young Hungarian financial market may be easily influenced by "fads". It is worth to stress how this market evaluated from no institutional mechanism for underpricing, where something like "fads" or "hot market" does not exist, to usage of bookbuilding allocation system. Lyn and Zychowicz (2002) use offering price as a proxy for company's quality. They find out that the asymmetric theories can not be applicable on this market. According to the authors the underpricing on this stock exchange is shaped by a momentum prior to the equity offering. They conclude that investor's interest may be periodic and depends if the market is seen as "hot".

The long term underpricing is on this market strong in both observation periods. After 9 months you can observe 26% underpricing and after 3 years 44%. When you look on this effect on the yearly basis, you can see immediately some years where the underpricing effect disappears after 3 years, but it was present after 9 months. Investors' too optimistic judgment about the future might explain this situation. This misjudgement bases either on false assumption about the market's development or on the too optimistic financial data. Miller (1977) come up with the similar conclusion. He thinks that different investors have different expectation toward the company's value. The most optimistic investors buy IPO. Over the time the opinion's difference decrease and converge toward the mean valuation, therefore the price falls. This explanation according to Ritter and Welch (2002) is applicable to a market where the float is small and there are not many investors. Hungarian market can be characterised in the similar way.

It is known that Hungarian companies had problem with switching of accounting standards. About the problems and their influence writes Lyn and Zychowicz (2004). They explain that negative underpricing is not caused by low quantity and quality of the available accounting information.

The stock exchange in Warsaw has the biggest capitalisation in this region. The transformation process began in 1991. The main driving IPO force during the first years of financial market existence was the transformation process of state-owned enterprises. Unfortunately this process was stopped by politicians, although the decreasing number of IPO of state-owned companies do not stopped the development of this financial market. The place of state-owned enterprises was taken by private placements. Today this trend is sustained and this stock exchange attracts foreign investors too. The world recession influenced this financial market too, because the number of IPO rapidly decreased. The description of polish financial market can be found in Cutler (1996). She claims that Poland was seen by investors as risky country and the government had to introduce underpricing strategy. According to Perotti (1995) the privatisation process is a sign of a government's obligation toward privatisation program and a willingness to share political risks with investors after privatisation. Privatisation and underpricing model are strategies used by a government to gain investor's confidence in a stable policy towards privatised companies.

According to the theory leaving money on the table is a sign for good quality and only rich companies can afford to perform such action. This is also a mechanism to discourage poor quality companies from entering the market. On this financial market you can observe that the amount is irregular and differs with the time. During the first two years there is almost no money due to very conservative privatisation strategy. In 1993 the amount of money increases due to use underpricing and leaving money on the table. The period 1995-97 is characterized by high amount of money left on the table. The post "internet bubble" period is characterized by moderate amount of money left on the table. Generally you can observe that companies decide to underprice their shares and leave almost no money on the table. This finding is opposite to the case described by Ritter and Welch (2002). They observed on the US stock exchange high amount of money left on the table. Lyn and Zychowicz (2003) observe moderate in Hungary and high first day returns in Poland.

The average short term underpricing in Poland is moderate after 3 and 6 months. The results of undervaluation on the yearly basis show that some years with exceptionally high underpricing. The findings of Cutler (1996) and Perotti (1995) about the underpricing can be confirmed. My results support Nivat's (1997) conclusion, that the price is used to attract potential investors to the particular market. The high undervaluation can be also explained by the lack of reliable financial data. The investment banks had at the beginning problems with the valuation, because the data was not flawless.

In my sample you can also observe that on this market there are hot and cold periods. This finding is consistent with Derrien (2005). The time-series regression made on 3 and 6 months results as dependent variable has shown that the independent factors such as P/E ratio, market capitalisation,

industry and year influence this effect, but their influence is minimal. This might confirm the market timing theory.

In the long run you can observe 29 % underpricing after 9 months and it rises to 89% after 3 years. This effect is even bigger when you look on it on the yearly basis. This would confirm that the companies were extremely underpriced especially at the beginning, because their valuation was too conservative. This interpretation is consistent with Teoh, Welch, and Wong (1998). Later this effect becomes smaller due to improved accounting standards. The reason for this sharp increase in the third year after the IPO on the Warsaw Stock Exchange can be found in Jelic and Briston (1993) paper. They mention that foreign investors played a major role in the privatisation process, because they participated in one third of all privatisation and held a significant proportion of shares.

As in the short term underpricing case there was also made a time- series regression on the long term results as dependent variables. The regression on 9 months result as dependent variable gives similar results as in the 3 and 6 months case.

The second time-series regression on 3 years result as dependent variable shows that the market capitalisation factor is influencing the undervaluation effect. This might mean that for investors it is not important how big the company is, because the size is variable in the long run. My result is consistent with Lyn and Zychowicz (2003) outcome.

Appendix A - German summary

Abstract in Deutsch

Alle drei Länder haben 1989 am gleichen Startpunkt angefangen, sie mussten nämlich Marktwirtschaftsreformen und Privatisierung durchführen. Kurz nach dem Start haben sich aber ihre Wege getrennt. Nach 17 Jahren kann man von über 3 verschiedenen Privatisierungsbeispielen sprechen. Dieses Thema ist ziemlich umfangreich, deshalb möchte ich mich nur auf den Underpricingeffekt in Polen, Ungarn und Tschechien konzentrieren. Meine Ergebnisse zeigen, dass dieser Effekt in diesen 3 Ländern unterschiedlich stark ist und die Privatisierungsmethode ihn beeinflussen könnte. Auf der ungarischen und polnischen Börse kann man die „heißen“ und „kalten“ Phasen erkennen. Ziemlich unüblich ist, dass man den „money left on the table“-Effekt in Polen beobachten kann, aber die Geldsummen minimal sind.

Zusammenfassung in Deutsch

Die ökonomische Umwandlung war selbst die Herausforderung für alle 3 Regierungen. Der Grund lag in der Planwirtschaft, denn unter diesem Regime sind alle Firmen in die Händen des Staates und alle Aktivitäten sind durch ein Zentralplanungsbüro kontrolliert worden. Das heißt, dass die Manager keinen Einfluss auf die strategischen Entscheidungen hatten. Nach 1989 beginnen in Polen, Tschechien und Ungarn die Marktwirtschaftsreformen. Alle drei Regierungen mussten sich rasch entscheiden, welche Privatisierungsstrategie sie anwenden werden, denn es bestand die Gefahr, dass die Manager das Unternehmensvermögen veruntreuen oder für den Bruchteil erwerben.

Es gibt drei Möglichkeiten ein Unternehmen zu privatisieren: Privatisierung durch die Börse, Verkauf an einen strategischen Investor oder ein Voucherprogramm. Jedes der drei Länder ist einer anderen Strategie gefolgt. In Tschechien hat die Regierung den Grossteil der Unternehmen durch das Voucherprogramm privatisiert, denn es erlaubte eine gleichmäßige und faire Verteilung der Beteiligungen. Wenige Firmen haben sich für den Börsengang entschieden. In Ungarn sah die Privatisierung ganz anders aus. Der ganze Prozess basierte auf der Teilprivatisierung, Gründung der Aktiengesellschaften und Austausch der Beteiligungen zwischen den Firmen. Teile der Aktien wurde den ungarischen und internationalen Investoren verkauft. In Polen wurden alle drei Methoden angewendet, denn jedes vierte Jahr wechselte die Regierung gewechselt und jede Regierungskoalition folgte einer anderen Privatisierungsstrategie. In meinen Ergebnissen sieht man, dass die Privatisierungsmethode eine Rolle spielt. Wie ich am Anfang erwähnt habe, dass man von drei verschiedenen Privatisierungsbeispielen sprechen kann, möchte ich jetzt den Leser meine Resultate vorstellen.

Der Underpricing-Effekt ist auf der tschechischen Börse niedrig, mit Ausnahme eines 3-jährigen Underpricing-Effekts. Wenn man ihn auf den Jahresbasis betrachtet, wird man zyklische Schwankungen

sehen. Man kann 3 Gründe identifizieren, die dieses Ergebnis erklären. Erstens, die Privatisierungsmethode: Durch das Voucherprogramm hat man anstatt der Kontrollrechte das Geld in die Aktienform zu den Aktionären transferiert. Zweitens, ungleichverteiltes Einkommen der Bürger: Wenige Leute konnten sich damals überhaupt die Aktien leisten, deswegen hat sich die Regierung für dieses Programm entschlossen, damit niemand aus dem Privatisierungsprozess ausgeschlossen bleibt. Deshalb spricht man im ersten Grund vom Geldtransfer. (mehr darüber in Jelic and Briston (2003)) Der letzte Grund ist die russische Finanzkrise: Die Investoren haben zuerst Geld im Panik aus dem Markt zurückgezogen und ihn dann für ein paar Jahre vermieden und sind letztendlich zurückgekommen. Wie ich früher erwähnt habe, hat sich Ungarn für die andere Methode entschlossen.

Der ungarische Finanzmarkt hat dieselbe Marktkapitalisierung wie der tschechische, aber der Underpricing-Effekt ist stark, mit Ausnahme eines 3-monatigen Underpricing-Effekts. Der Grund liegt darin, dass nur eine geringe Anzahl der Firmen durch die Börse privatisiert war und die Investment-Banken Probleme mit der Firmenwertberechnung hatten. Es ist auch wichtig zu merken, dass die Qualität der Firmen niedrig war und man den Aktienwert unterschätzen musste, um die Unternehmen überhaupt zu verkaufen. Auch ein interessantes Ergebnis liefert meine Regressionsanalyse. Sie zeigt, dass man auf diesem Markt zwischen zwei Perioden unterscheiden kann: „Heißen“ und „Kalten“. Dieses Resultat wird auch in die Literatur bestätigt (siehe z.B. Aggarwal and Rivoli (1990)). Als Letztes möchte ich den polnischen Finanzmarkt vorstellen.

Das ist die größte Börse in Mitteleuropa, wenn es um die Marktkapitalisierung geht. Wie ich schon früher erwähnt habe, wurden alle 3 Privatisierungsmethoden angewendet. Leider haben mir die gesammelten Daten für dieses Land nur erlaubt, das „money left on the table“ zu berechnen. Man sieht, dass der Wert unterschiedlich ist, aber immer geringer als z.B. auf dem US-Markt. Es bedeutet, dass die Unternehmen sich eher für die Wertunterschätzung ihrer Aktien entscheiden als für „money left on the table“.

Der Underpricing-Effekt ist durchschnittlich stark im kurzfristigen Zeithorizont, aber in längerem Zeithorizont sind seine Werte hoch. Solche Ergebnisse könnten durch die absichtliche Unterschätzung der Aktien als ein Mechanismus für das Investorenanlocken erklärt werden. Wie auch in Ungarn zeigt meine Regressionsanalyse, dass es auf diesem Markt „heiße“ und „kalte“ Phasen gibt.

Wenn man auf die Resultate auf der Jahresbasis schaut, sieht man, dass der Underpricing-Effekt stark schwankt. In den Neunzigerjahren war es nicht unüblich, dass sein Wert über 100 % war. In der Literatur kann man folgende Erklärung finden: Die Kombination von schwachen Buchhaltungsstandards und falsche bzw. nichtausreichenden Finanzdateien haben bewirkt, dass die Firmenwertberechnung ziemlich schwierig war.

Die zukünftigen Untersuchungen könnten sich auf den Underpricing-Effekt nach den „Internet bubble“- und „subprime“-Krisen konzentrieren. Es wäre auch interessant zu sehen, wie die Kleinanlegerkultur und Ihre Beteiligungen sich in letzten 17 Jahren entwickelt haben. Anfang der

Neunziger war es nicht unüblich, große Schlangen vor den Banken und große Aktienreduktion bei der Aktienzeichnung zu sehen.

Appendix B - English Summary

Under the communistic regime whole economy was controlled by the Central Planning Office. When the communistic regime collapsed the whole economy had to be transformed in order to meet open market standards. One of these standards is privatisation process. Hungary, Czech Republic and Poland choose a different approach to this issue, because they implied different strategies. Actually you can speak about three different privatisation scenarios.

In Czech Republic the government chose to privatize mainly through voucher program. Small number of companies decided to be privatised through the stock exchange. The whole privatisation process in Hungary was based on partial privatisation, the foundation of corporation and the exchange of inter-enterprise ownership. Some companies were sold to international investors and the rest part was privatised through stock exchange. In Poland policy makers decided to use voucher program, privatisation through stock exchange and sales to international investors. This decision was politically motivated, because the ruling parties changed every 4 year and each of new ruling party had different approach to this manner. As I mentioned in the beginning there are three different approaches to the privatisation problem, but I would like to make a reader more familiar with the underpricing effect on these markets. It is important to remember that privatisation process shaped the structure of financial markets in these countries and influenced them for long years.

The underpricing effect in Czech Republic is weak except of 3 year underpricing. If you look on the underpricing effect on the yearly basis, you can observe that there are some years when this effect is bigger than the average. There are 3 reasons that might explain this situation. First, the privatisation's scenario; The voucher schemes caused that you can observe the privatisation of cash flow claims instead of the privatisation of control rights. Second, unequal distributed income; Citizens were too poor to buy shares in newly privatised companies. That was the reason why the government decided to use the voucher program in order not to exclude anybody from the privatisation program. That is why you could speak about the cash flow transfer (for more details see e.g. Jelic and Briston (2003)). Third, the Russian Default in 1997/98; Domestic and international investors pull away their money in panic from Easter Europe then waited for few years and when situation stabilized they returned. The Hungarian government choose a different privatisation method.

Hungarian financial market has the same market capitalisation as the one in Czech Republic. The underpricing effect is strong except for 3 months undervaluation. This effect might be explained by small number of companies that could be privatised through stock exchange and as a result the government had to undervalue them in order to attract investors. My regression results confirm Aggarwal and Rivoli

(1990) suggestion that on this market “hot” and “cold” period exists. The Polish governments decided to introduce all 3 privatisation strategies.

The stock exchange in Warsaw has the biggest capitalisation in this region. According to the theory leaving money on the table is a sign for good quality and only rich companies can afford to perform such action. In case of this market the companies decide rather to underprice their shares and then leave money on the table.

The underpricing effect is moderate strong in the short run, but it increases in the long run. This effect is also very strong on the yearly basis. Sometimes it is bigger then 100%. These results could be explained by problems with the valuation in the beginning and government’s strategy to introduce a strong underpricing in order to attract potential investors. My regression results support the Derrien (2005) finding about “hot” and “cold” periods on the polish stock exchange.

The future research could focus on the underpricing effect after the “internet bubble” and “sub prime” crises. It would be also interesting to see how the minority shareholder’s culture developed over the last 17 years. In the beginning it was not unusual that people stood in long queues in front of banks for the share subscription.

Appendix C - Curriculum vitae

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EDUCATION

1.10.2001- International Economy at Vienna University (13.Semester)
20.06.2001 Final examination
01.09.1997-20.06.2001 High School in Poland (mathematic- informatics Profile)
01.09.1989-30.06.1997 Primary school (1-8.Class) in Poland

EXPERIENCE

30.03.2008 - Project Technical Accountant in Air Products and Chemicals Inc.
01.07 – 15.11.2007 Internship in Invest Kredit in financial analyse department in Vienna
01.10. 2006 – 30.03.2007 Internship in PriceWaterhouseCoopers in Vienna
1.07 – 30.09.2006 Internship in Invest Kredit in Vienna
16 - 17.09.2003 Case on study in PriceWaterhouseCoopers in Leipzig
1.09 – 30.09.2002 Training in Controlling und Bookkeeping department in Nadwislanska Spolka Weglowa KWK“ Silesia“ Ltd in Poland

FOREIN LANGUAGES AND OTHER SKILLS

Polish	Native language
English	Fluent
German	Fluent
Russian	Intermediate

Good PC-skills (MS-Office), Reuters and Bloomberg system

9. Literature:

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